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CONTENTS

Buckling of the Lower Anterior Teeth.....*Smith*....303
Enamel Hypoplasia.....*Giro*....310
Preservation of Oral Spirochetes.....*Hampp*....317
Plummer-Vinson Syndrome.....*Wahlquist*....320
Dental Public Health Administration. I......*Wisan*....322
Application of A.D.A. Public Health Policies...*Irwin*....330
Advanced Age and Caries in White Rats. II...*Smith*....340
Editorials
The Role of Fluorine in Dental Caries.....345
Dental Residency Programs in VA Hospitals.....346
News of Dentistry.....348
Administrative Status of Navy Dental Corps.....365
Dental Bills in State Legislatures.....369
Book Reviews.....371
Current Literature.....372
Deaths.....375
Directory.....378
Announcements.....380

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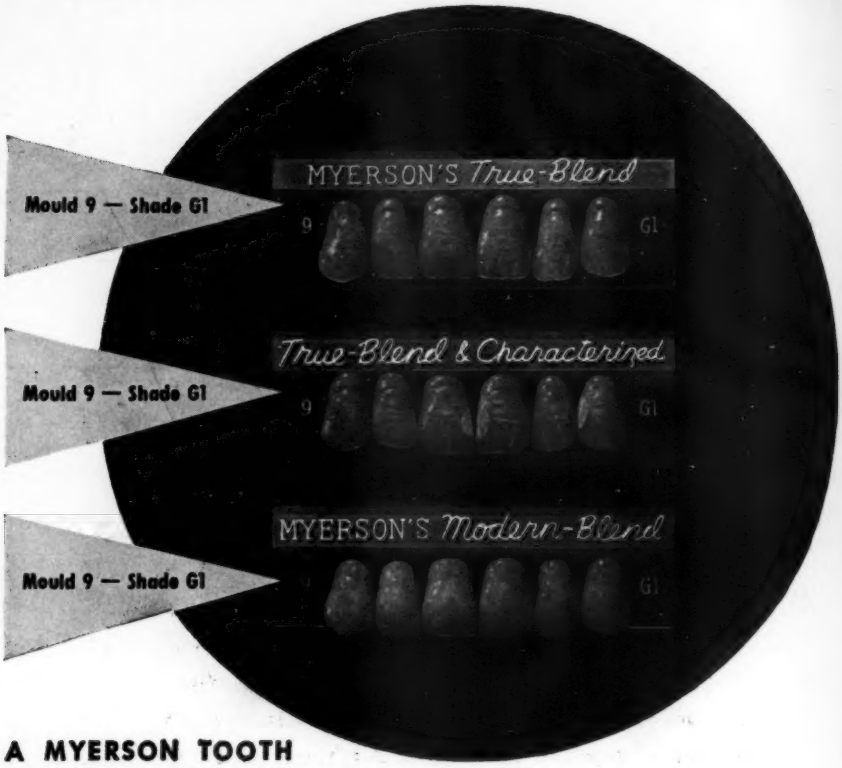

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PERIODONTAL CONDITIONS ASSOCIATED WITH BUCKLING OF THE LOWER ANTERIOR TEETH: ETIOLOGY, DIAGNOSIS AND TREATMENT

Rowe Smith, D.D.S., Texarkana, Ark.-Texas

PROGRESSIVE crowding or displacement of the lower anterior teeth often is observed in adult persons. This late disturbance of the normal alinement of the lower anterior teeth is termed "buckling." Unhygienic and unesthetic conditions result, and various periodontal diseases may develop or become aggravated by this condition. Reduction of the buckling by making it possible for the displaced teeth to assume more natural positions in the dental arch is an additional factor in the successful treatment of periodontal diseases[1] and will aid in the prevention of interproximal caries in the lower anterior region.

No reference to buckling of the lower anterior teeth in relation to periodontal disease could be found in the literature. This presentation deals with the etiology, diagnosis and treatment of buckling of the teeth only as it relates to adults.

Read at the eighty-first midwinter meeting of the Chicago Dental Society, Chicago, February 12 and 13, 1946.

1. Smith, Rowe, Fads in Periodontal Treatment That Have Passed into Disuse and Fundamentals for Successful Treatment That Remain. *J.A.D.A.* 26:1319 (August) 1939.

Etiology

The causative factors of progressive displacement of the teeth are not yet completely known. Several possibilities should be considered. Buckling of the lower anterior teeth frequently starts at the time when the lower third molars are in the process of eruption, especially if these teeth are abnormally inclined mesially. Therefore, converging pressure exerted by these erupting teeth could be held responsible for a buckling in the anterior region. However, there are many cases in which this coincidence cannot be observed. For instance, buckling is commonly observed in mouths in which third molars are congenitally missing. In these cases, there is a possibility that the natural drift of the teeth toward the median line has been abnormally accelerated or exaggerated, producing a condition that would create buckling or displacement of the lower anterior teeth. This condition, in which pressure evidently comes from both the right and left, could be termed "converging pres-

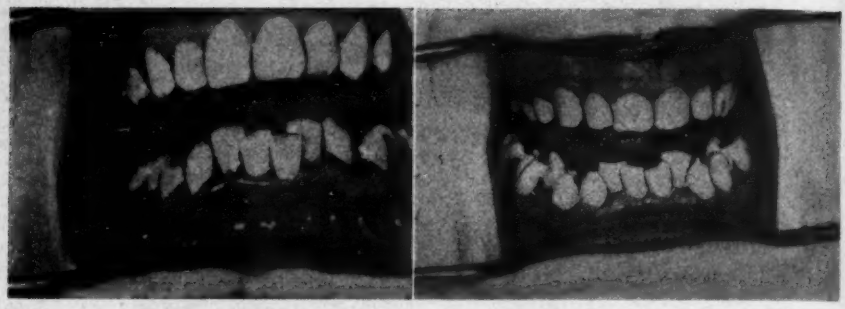

Fig. 1.—Left: Labial displacement of lower anterior teeth. Right: Lingual displacement

sure" and should be considered as a possible major causative factor in the occurrence of buckling.

Mesial drift is a natural adaptation to interproximal wear. In spite of the loss of dental substance at the contact points, the teeth are kept in tight contact by the continual drifting toward the midline. The teeth of young persons have round or marble-like contact points, but with increasing age the contact points are worn to contact planes. In persons 50 or more years of age, the contact points usually are worn completely flat, yet the teeth are still in tight contact. This indicates that there is a drift toward the median line. Malrelationship of the inclined planes of the lower teeth to the upper teeth also might be a factor in causing buckling; likewise the lower jaw might not be large enough to accommodate all of the teeth.

Whatever may be the cause of the secondary buckling of the lower anterior teeth, it seems to be necessary to assume that some slight primary derangement, though too small to be diagnosed readily, disturbs the balance of the forces of eruption and mesial drift. There can be no doubt that erupting and moving teeth often exert sufficient pressure on contiguous teeth to displace them. These forces, as well as the forces of mastication, can be checked only by exact alinement of the teeth in an arch. The slightest break in this alinement may lead to progressive abnormal shifting of teeth. In view of the progressive character of buckling and the deleterious effect on the crowded teeth and their supporting tissues, minute attention should be paid to any slight displacement of the teeth of the lower arch, especially at the time of eruption of the lower second and third

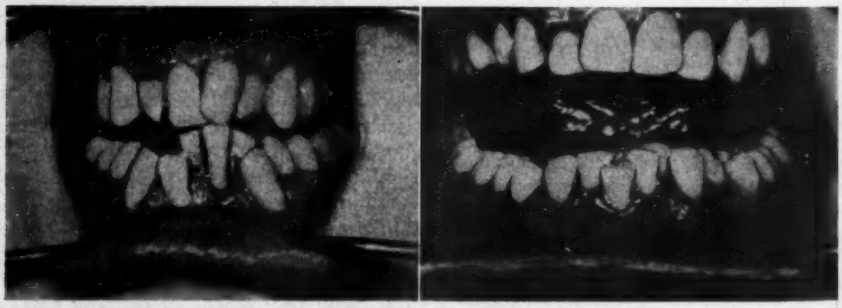

Fig. 2.—Left: Supraclusion. Right: Complete overlapping

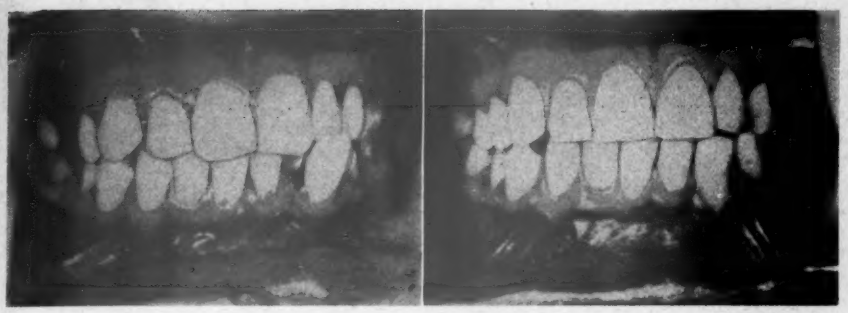

Fig. 3.—Woman, aged 30 years. Left: Left cuspid displaced and accompanying periodontal involvement. Right: Five months after removal of lower left lateral incisor

molars. The delicate balance between the tongue, cheek and lips and normal mesial drift often is disturbed. Orthodontic treatment, if begun at the proper time, may prevent an aggravation of the displacement or buckling.

It is possible that hereditary, endocrine or other systemic disturbances may predispose to buckling by influencing the normal mesial drift; however, this requires further investigation.

Diagnosis

Where the buckling condition is present, the lower anterior teeth are displaced into various abnormal positions. Teeth may be displaced labially (Fig. 1, left), lingually (Fig. 1, right), or they may be forced into supraclusion (Fig. 2, left). Complete overlapping frequently is observed (Fig. 2, right), and sometimes a cuspid (Fig. 3, left) or an incisor (Fig. 4) is forced completely out of the dental arch. In nearly all cases there is accompanying periodontal involvement and cuspid displacement. The lower anterior teeth appear to be squeezed together.

Labial displacement of a lower anterior tooth may cause secondary displacement of its upper antagonist (Fig. 5).

Where the lower anterior teeth are displaced into abnormal positions, periodontal disease usually occurs or, if already present, it may be aggravated. Hypertrophic gingivitis, deep pocket formation or marked recession of the periodontal tissues often may be attributed to buckling of the lower anterior teeth. In such cases the prognosis is unfavorable and it is extremely difficult, without reduction of the buckling, to obtain and maintain good results after application of accepted periodontal treatment.

Treatment

The most successful and, at the same time, the simplest method to reduce and often to eliminate buckling in the lower anterior region is to remove one of the lower incisors. The most seriously affected incisor should be selected for removal. This is either the tooth in which periodontal disease or caries is most advanced or the tooth that is most displaced. Only an incisor and never a cuspid should be removed.

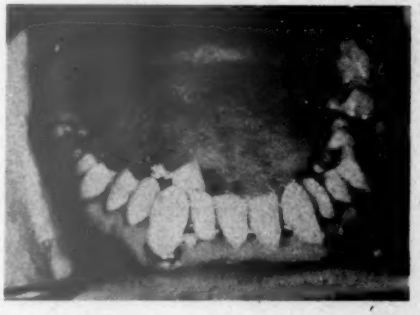

Fig. 4.—Incisor forced out of the dental arch

Fig. 5.—Woman, aged 28 years. Labial displacement of the upper and lower right central incisors with accompanying deep periodontal pocket formation on the mesial, lingual and distal sides of the upper right central incisor

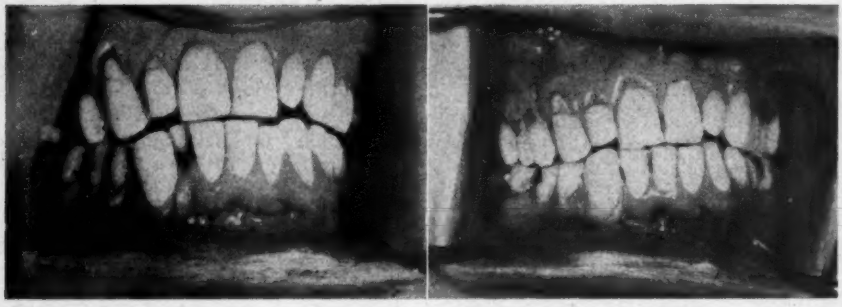

Fig. 6.—Man, aged 30 years. Left: Before removal of lower right lateral incisor, which also eliminated a deep pocket involving this tooth and the right cuspid. Right: One year after operation

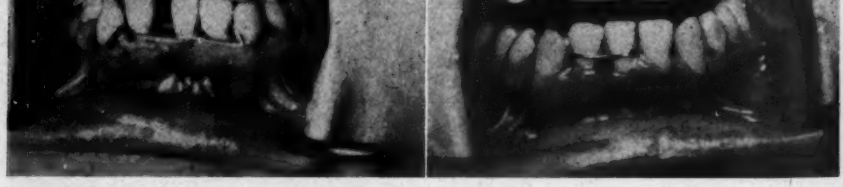

Fig. 7.—Woman, aged 29 years. Left: Wire ligature from lower left cuspid to lower left central incisor to prevent excessive movement of the left incisor. Rubber ligature from lower left central incisor to lower right lateral incisor in order to move right lateral incisor mesially and to permit the right cuspid to assume a more favorable position. Right: Three months later. Retaining wire in place

Grinding of crowded teeth for the elimination of supraclusion is generally insufficient to prevent progress of the buckling. In spite of this treatment, some of the anterior teeth may be lost.

If the inferior labial frenum attaches close to the gingival crest, the periodontal condition may be aggravated by the abnormal tension on the gingival tissues during movement of the lower lip. In cases in which this additional complication exists, it is best to remove the incisor which is involved by the labial pocket because of the abnormal attachment of the inferior frenum. This type of periodontal pocket rarely is demonstrable by roentgenologic examination.

After removal of one of the crowded incisors, the remaining teeth often assume more favorable positions without any additional treatment (Fig. 6). This illustration shows that removal of a lower incisor had a favorable influence on both the upper and the lower dentition, as well as on the periodontal condition. Improvement of occlusal relationship and position of the lower right cuspid and other anterior teeth is evident.

The use of simple rubber and wire ligatures will accelerate closing the space and improve the position of the teeth (Fig. 7). In this case the upper left lateral incisor was congenitally missing, which probably caused the upper dental

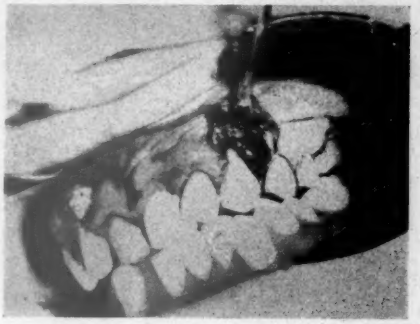

Fig. 8.—Woman, aged 40 years. The deep periodontal abscesses involving the upper right and left cuspids could possibly have been caused by buckling of the lower anterior teeth. After the flap had been retracted, granulomatous tissue was revealed in the upper right and left cuspid regions. The lower left lateral incisor was selected for removal because it was most seriously involved periodontally

arch to be too small for the normal complement of lower teeth. A space between the upper central incisors often is caused by the wedging effect of the opposing larger lower dental arch and usually will disappear after reduction of buckling.

In Figure 3, the lower left cuspid had been forced almost out of the dental arch, and several additional upper and lower teeth had been displaced, with attending periodontal inflammation. The lower left lateral incisor was selected for

Fig. 9.—Same patient as in Figure 8. Left: Fifty-fifth day after operation in upper cuspid region and after removal of the lower left central incisor, with wire ligature employed to encourage the roots of the left central incisor and cuspid to assume a more favorable position. Right: One year later, considerable improvement of periodontal tissues in the upper and lower regions is evident

Fig. 10.—Woman, aged 18 years. Left: Lower right central incisor involved by apical abscess. Right: Four months after removal of tooth

removal because of the periodontal involvement. Five months after operation the periodontal condition and the positions of the upper and lower teeth, especially the lower left cuspid and upper right cuspid and second bicuspid, were considerably improved.

Removal of one of the crowded incisors and improvement of the alinement of the remaining teeth not only simplifies treatment of any periodontal disturbance by helping to establish and maintain better hygienic conditions but also improves the dental appearance. Removal of a lower incisor decreases the circumference of the lower arch, thereby reducing trauma resulting from a wedging effect of a lower dental arch which is too large for the opposing upper arch. In addition, the elimination of overlapping greatly reduces the tendency toward interdental caries in the lower anterior region.

Fig. 11.—Same patient as in Figure 10. Roentgenologic evidence of apical involvement

Treatment of the patient shown in Figures 8 and 9 was completed six years ago, and there has been no recurrence of the periodontal condition. It is my opinion that periodontal health, especially in the anterior region, could not have been maintained without reduction of the buckling condition.

Frequently this method also can be utilized if destruction of the periodontal tissues around one lower anterior tooth is so extensive as to require its removal. This eliminates the necessity of constructing some type of fixed or removable lower anterior tooth replacement that creates additional occlusal pressure on the contiguous teeth which already may have weakened periodontal support. Replacement of a lower incisor is a difficult procedure and the display of gold often is impossible to eliminate.

In cases in which there is even slight buckling and the supporting bone of a lower incisor has been destroyed on the mesial or distal sides, or both, to the extent of a half or more, experience has

Fig. 12.—Patients treated more than sixteen years previously

demonstrated that it is better to remove the lower incisor. Removal of the involved incisor makes it possible to preserve all bone matrix, which will aid in the regeneration of bone. It also reduces the possibility of involvement of the contiguous teeth which may not be affected seriously periodontally. Gingivectomy or deep subgingival curettage often destroys or limits these possibilities.

This method of treatment frequently can be utilized to close the space created by the removal of any lower anterior tooth because of an apical abscess or accidental fracture involving the pulp (Figs. 10 and 11).

The photographs shown in Figure 12 were made sixteen years after treatment. Contrary to the expectation of many dentists, no contacts were opened and the periodontal condition is good, with an improvement of dental appearance and hygienic conditions.

This method of treatment affords possibilities to improve periodontal, apical and esthetic disturbances resulting from buckling of the lower anterior teeth. The age of the adult is of no consequence. The improvement occurs in certain cases without any further treatment, in others by the use of simple methods. During the use of this method for over eighteen years, no undesirable results have been noted. The treatment outlined can be carried out by any dentist with assured favorable results.—*405 East Fifth Street.*

Scientific View.—Two divergent views of science and research were exemplified in the Senate debate which resulted in the passage of the National Science Foundation bill. One view held that science is for the people, who act through government to support the creation and application of scientific knowledge so that discoveries are made freely available to all.

The other view considers science as a useful but special mechanism which is best left in the hands of scientists appointed for long terms and remote from democratic control. The people through their government should not be concerned with the application of science.

The bill, S. 1850, was passed embodying the science-for-the-people viewpoint.—*From Science News Letter, July 13, 1946, p. 19.*

ENAMEL HYPOPLASIA IN HUMAN TEETH: AN EXAMINATION OF ITS CAUSES

Carlos M. Giro, D.D.S., New York

BEFORE discussing the causes of hypoplasia of the enamel, I shall review briefly the process by which hypoplasia is produced. Calcification of the deciduous dentition is largely an intrauterine process. According to the classic theory of tooth formation and calcification, the first rods of enamel are formed after some dentin has been laid. Calcification of the enamel then begins at the top of the follicle and gradually progresses until it reaches the base.

Description of Process

Hypoplasia of the enamel presents itself in the form of pits, grooves or furrows, or notches of varying depth and extension.[1,2] The presence of hypoplasia in the form of fossae or furrows is an indication that the causative agent affected the ameloblasts at a definite stage of development, hindering or completely nullifying enamel formation for a more or less extended period but allowing the ameloblasts to continue their work later. The presence of several superimposed furrows in the teeth is an indication that the causative agent has acted and receded several times, allowing the alternate formation of normal and abnormal enamel. These pits and furrows, when viewed in a longitudinal section of a tooth, show the form of a V, their typical architecture on the incisal and gingival slopes differentiating them from nonhypoplastic erosions. The incisal slope is flat and oblique and gradually joins the external normal enamel surface. The gingival slope of the fossa or groove is much more marked, assuming the form of a roundlet as described by Magitot.

This particular architecture may be explained as follows: When, during enamel formation, any cause interferes violently enough with calcium metabolism, the ameloblasts are seriously disturbed and undergo retrogressive changes. Their height is shortened and, instead of being cylindrical, they affect cuboidal and even squamous shapes. These changes bring about a complete disruption of enamel formation.

Later when the disturbing agent ceases, the ameloblasts adjacent to the affected ones resume the enamel-building process. Owing to the proximity of the ameloblasts to the affected layers, their normal position is somewhat changed, and they lie at a higher level on the follicle. Not finding any obstacle, they resume amelogenesis. In an effort to repair the damage, they have a tendency to overcompensate by extending their functions and tipping into the hypoplastic zone to cover the injury. They produce in this stage a more abundant but less calcified enamel. It is in this period of normalization that the feature described as Magitot's roundlet is formed. Later the work of the ameloblasts can be completely normal.

Diamond and Weinmann[3] differ with the classic theory of tooth calcification. According to them, normal enamel development presents two completely different phases: (1) enamel matrix formation

1. Giro, C. M., Enamel Hypoplasia and Its Probable Relation to Oral Disease. *Am. J. Orth. & Oral Surg.* 31:327 (June) 1945.

2. Giro, C. M., *Diagnostico clinico de las afecciones sifiliticas bucales.* Havana University, 1940.

3. Diamond, Moses, and Weinmann, J. P., *The Enamel of Human Teeth.* New York: Columbia University Press, 1940.

and (2) enamel maturation. During the first phase, the characteristic shape of the crown is determined by incremental apposition of enamel matrix, layer upon layer, from the dentino-enamel junction toward the surface. This enamel matrix consists of 65 per cent organic material and water and about 35 per cent mineral salts in the colloidal state.

During the second phase, the organic material and water are removed almost completely and replaced by mineral salts. This process occurs after the enamel matrix has reached full thickness in the occlusal parts of the crown. Maturation then starts at the tip of the cusps or at the incisal edge and proceeds toward the cervix in cross relation to the incremental lines of Retzius. Maturation begins with the crystallization of the colloidal calcium salts as hexagonal apatite crystals. Developmental disturbances of the enamel during the first phase will therefore produce enamel hypoplasia. The affected areas will be those in which enamel matrix formation occurred simultaneously with the metabolic disturbance.

Location of Lesion

The aforementioned facts explain the varying distance of the lesion from the incisal border or occlusal surface of the teeth. The location of the lesion depends on the period of calcification or matrix formation in which the disturbing agent acted. Extension of the lesion will depend mainly on the span of action of the causative agent. Accordingly, the alterations quite accurately tell the onset, duration and grade of intensity of the force that compelled the follicle to develop hypoplastic enamel.

The independent discovery by Rushton[4] and Schour[5] of the landmark known as the "birth line" or "neonatal ring" has made even more definite the significance of chronologic incidence in the analysis of hypoplasia. The neonatal line is indicated by a pronounced line of Retzius in the enamel and a well-marked line of Owen in the dentin. These lines constitute the natural boundary between the enamel formed before and after birth.

Since the crowns of deciduous teeth are formed partly in the uterus and partly after birth, the aforementioned landmark permits us to determine whether the causative agent of hypoplasia acted before or after birth. The cuspal hypoplasia in the permanent first molar or the incisal notch in upper central incisors or lower central and lateral incisors indicates an agent acting during the first half of infancy, and so on.

The difference in the period of maturation and calcification of various teeth explains the different location of the lesion in several teeth in the same mouth. The process of matrix formation and calcification is under way first in the permanent first molar and central incisor, second in the cuspid and third in the upper lateral incisor. For example, suppose that a complement of upper teeth shows hypoplasia in the occlusal surface of the central incisor. The cuspid, if it is affected, will have a furrow or fossa closer to the incisal edge, and the lateral incisor will have it closer to the incisal edge than either the central incisor or the cuspid. If the disturbing influence acted a short time when the cuspal and incisal parts of the first molar and central incisor were forming, only these teeth will show the lesion. If the cuspid has already begun calcification, the central incisor will have part of its crown formed, and accordingly the lesion will be nearer the free end of the crown in the cuspid than in the central incisor, and so on.

Hypoplasia of the enamel has pointed out, by its distribution on the anterior teeth, the relatively late formation and

4. Rushton, M. A., The Birefringence of Deciduous Tooth Enamel Formed Before and After Birth. *Brit. D. J.* 67:1 (July 1) 1939.

5. Schour, Isaac, Neonatal Line in Enamel and Dentin of Human Deciduous Teeth and First Permanent Molar. *J.A.D.A.* 23:1946 (October) 1936.

calcification of the upper lateral incisors, as shown first by Zsigmondy (originator of the term "enamel hypoplasia")[6] and Berten.[7]

Interesting in this respect is the relatively recent study of enamel hypoplasia made by Calteux[8] among school children of the city of Luxemburg. The distribution of the lesion was as follows: the first molars were affected in nearly 100 per cent of the cases; the upper central incisors and lower central and lateral incisors, in about 90 per cent; the upper and lower cuspids, in 83 and 73 per cent, respectively; and the upper lateral incisors, in 45 per cent.

Sarnat and Schour[9] have indicated that the origin of hypoplastic enamel of deciduous and permanent teeth is unknown in 50 per cent of the cases. Their well-documented data show that approximately two-thirds of the cases occur from birth to the end of the first year. Most of the remaining one-third of the cases develop from the thirteenth to the thirty-fourth month. Less than 2 per cent have their origin in the late childhood period. Their findings, as well as Kronfeld's,[10] seem to indicate that prenatal hypoplasia is rare.

Possible Causative Agents

In a perusal of the literature, numerous and conflicting opinions are found in regard to the origin of hypoplasia. Calteux[8] considers the causative agent to be a severe disturbance of the calcium metabolism with hypocalcemia, as in rickets, tetany, measles, whooping cough, pneumonia or severe gastro-intestinal disturbances. Stein,[11] in 1936, showed that the deciduous teeth of prematurely born children have a comparatively high incidence of enamel hypoplasia, and suggested that premature termination of intra-uterine existence and a subsequent maladjustment in postnatal nutrition might be responsible for such defects.

Chompret[12] and others have mentioned a "traumatic cause." Magitot[13] attributed great importance to the convulsions of eclamptic origin. Bunon[14] mentioned measles, rickets and scurvy. Tomes,[15] Broca,[16] Fauchard,[17] and numerous contemporary authors have accused all children's diseases that attack nutrition during periods of tooth calcification.

Nicati,[18] Castanié[19] and numerous present-day researchers have incriminated rickets. Martha Eliot and others[20] reported that 34 per cent of children who had suffered severe attacks of rickets had enamel hypoplasia. Parrot[21] considered rickets of syphilitic origin as a causative agent. Castanié[19] added to rickets the artificial feeding of babies, because of the serious gastro-intestinal disturbances that are often produced. Fleischmann[22] and Erdheim[23] considered

6. Zsigmondy, Otto, Beiträge zur Kenntnis der Entstehungsursache der hypoplatischen Emaildefecte. *Tr. World's Columbian D. Cong.* 1:48, 1893; *D. Cosmos* 35:709 (September) 1893.

7. Berten, J., Hypoplasie des Schmelzes. *Deutsche Monatschr. f. Zahnh.* 13:425 (September) 1895; 483 (October) 1895.

8. Calteux, J. P., Die Schmelzhypoplasie. *Deutsche Zahnh.* 1934.

9. Sarnat, B. G., and Schour, Isaac, Enamel Hypoplasia (Chronologic Enamel Aplasia) in Relation to Systemic Disease: A Chronologic, Morphologic and Etiologic Classification. *J.A.D.A.* 28:1989 (December) 1941; 29:67 (January) 1942.

10. Kronfeld, Rudolf, *Histopathology of the Teeth and Their Surrounding Structures.* Philadelphia: Lea & Febiger, 1939.

11. Stein, George, Schmelzschäden am Milchgebiss und ihre klinische Bedeutung. *Ztschr. f. Stomatol.* 34: 843 (July-August) 1936.

12. Chompret, Malformations buccales dans l'hérédo syphilis. *Comptes rendus du Congrès internat. de Méd.*, 1900.

13. Magitot, M. E., Honeycombed Teeth Regarded as an Evidence of Infantile Convulsions. *Brit. D. J. Sci.* 24:939, 1881.

14. Bunon, *Essai sur les maladies des dents.* Paris, 1743.

15. Tomes, C. S., *Traité de chirurgie dentaire,* 1873.

16. Broca, A., *Cliniques de chirurgie infantile,* 2nd series, 1905.

17. Fauchard, *Le chirurgien dentiste.* Paris, 1728.

18. Nicati, *Revue mens de méd. et de chir.*, 1876.

19. Castanié, *De l'érosion ou des altérations des dents permanentes à la suite des maladies de l'enfance.* Paris, 1873.

20. Eliot, Martha M., and others, A Study of the Teeth of a Group of School Children Previously Examined for Rickets. *Am. J. Dis. Child.* 48:714 (October) 1934.

21. Parrot, M. On the Different Forms of Atrophy of the Teeth (Effects of Hereditary Syphilis on the Teeth). *Am. J. D. Sci.* 15:468, 1881.

22. Fleischmann, L., Die Ursache der Schmelzhypoplasien. *Vrtljschr. f. Zahnh.* 25:868, 1909.

23. Erdheim, *Rachitis und Epithelkörperchen. Denkschr. d. math. u. nat. Klasse d. Kais.* Akad. d. Wissenschaften, 1914.

tetany a factor. Galippe[24] introduced hereditary influences as causative agents. Erauskin[25] accused any disease able to harm or disrupt internal secretion glands, especially the thyroparathyroid apparatus. Sanchez,[26] Fournier,[27] Hutchinson,[28] Cavallaro,[29] Pasini[30] and others attributed a syphilitic origin to hypoplasia.

Mellanby,[31] Howe,[32] Toverud[33] and many others give defective prenatal nutrition (lack of vitamins and minerals) an important role as a cause of enamel hypoplasia. Bessey and Wolbach,[34] Wolbach and Howe,[35] Boyle,[36] Mellanby,[31] King[37] and many others have pointed out the importance of vitamin A in the development of the teeth, since the tooth bud cannot form enamel in the absence of this vitamin.

It can be seen that the problem of determining the causes of hypoplasia of human enamel is a rather complicated one. It is a known fact that at least 68 per cent of all cases of hypoplasia reported have occurred during the first year of life. By review of the more common diseases in that period, it is possible to eliminate some factors by showing that the diseases did not occur at the same time as the enamel defects.

Exanthematous Diseases

Because of the epithelial origin of the ameloblasts, the exanthematous diseases are often suggested as a causative agent of enamel hypoplasia. However, measles, scarlet fever, chickenpox, smallpox and other similar diseases occur very infrequently in the early period of life in which most cases of hypoplasia occur. Such authorities as Diamond and Weinmann,[8] Sulzberg,[38] and Sarnat and Schour[9] have further demonstrated the relatively unimportant role of exanthematous diseases in the production of enamel hypoplasia.

Other Diseases

Other diseases, such as whooping cough, pneumonia, tuberculosis and diphtheria, although virulent enough to cause hypoplasia, are rarely seen in the first few months of life, the time in which the most common types of enamel defects take place. Vomiting, diarrheas and intestinal intoxication, not infrequent during this period, do not seem to be severe enough to produce such a marked disturbance in calcium metabolism, unless they are of extreme severity. Convulsions of several origins occur sometimes in early infancy, but again it is unlikely that a marked disturbance in calcium metabolism would occur.

Defective Nutrition

Defective prenatal nutrition has often been accused as a causative agent of hypoplasia. Kronfeld and Schour[39] and others dissent in this opinion. They feel

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28. Hutchinson, J., Influence of Hereditary Syphilis on the Teeth. *Lancet* 9:449, 1856. A Report on Malformation of Teeth. *Brit. M. J.* 18:513, 1861. Syphilis. London: Cassell & Co., Ltd., 1887.

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31. Mellanby, May, *Diet and Teeth; An Experimental Study.* Part I. London: His Majesty's Stationery Office, 1929.

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37. King, J. D., Dietary Factors in Production of Dental Disease in Experimental Animals with Special Reference to Rat. *Brit. D. J.* 59:233 (September 2); 305 (September 16) 1935.

38. Sulzberg, Sidney, Statistical Study of Enamel Hypoplasia in Relation to Occurrence of Exanthematous Diseases and Rickets and Use of Cod-Liver Oil During First Year of Life. *Columbia D. Rev.* 12:13 (January) 1939.

39. Kronfeld, Rudolf, and Schour, Isaac, Neonatal Dental Hypoplasia. *J.A.D.A.* 26:18 (January) 1939.

that the fetus is very well protected in the uterus and they agree with Hess and Abramson[40] that the mother's prenatal mineral metabolism has a minimal influence on the child's teeth. Examination of prenatal enamel confirms their opinion.

In regard to the lack of vitamin A as a causative agent of hypoplasia, it can be stated that the findings, although plainly confirmed, are based on experiments on the continuously developing incisors of rats and guinea pigs. The suggestion that vitamin A is a common cause of hypoplasia in human teeth is not supported by statistical findings.

Vitamin D deficiencies, which have a marked influence on dentinal tissue and bone, do not seem to affect growing enamel, as pointed out by Sarnat and Schour[9] and others in experiments with vitamin D deficiencies. This fact tends to disprove the belief that this dietary deficiency by itself is responsible for many cases of enamel hypoplasia.

As pointed out by Erauskin[25] and others, enamel does not respond readily to rickets, while dentin is very sensitive to it. Only when the deficiency is extremely severe is hypoplasia of the enamel produced. The most severe cases of rickets generally appear after the first or, more frequently, the second year of life, when the first molar and the anterior teeth (the most frequently affected teeth) have already formed and a large portion of their crowns has been calcified. In regard to calcium and phosphorus deficiencies, Gaunt and Irving[41] have pointed out, in experiments with rats, that enamel is not affected by diets deficient in these minerals.

Enamel hypoplasia seems to occur when severe deficiencies in minerals and vitamins D or A act in conjunction, as pointed out by Lund and Armstrong,[42] Sarnat and Schour[9] and others. However, even in low income families, these deficiencies do not seem likely to occur as frequently as the occurrence of hypoplasia would suggest.

Traumatism and Infections

Traumatism and infections, although capable of producing "erosions" in the enamel, can be considered exceptional in occurrence. Besides, this type of erosion is of a typical, nonsymmetrical type, involving one tooth or occasionally two (Turner teeth), and does not resemble the erosion resulting from hypoplasia. Tetany can be eliminated from the group of important causes because the lack of relation between these two conditions in most cases has been proved. The influence of heredity, although proved in certain sporadic cases in the literature, can be dismissed as a causative agent in most cases.

Syphilis

Since the time of Fauchard, syphilis has been accused as being the cause of some dental anomalies. Hutchinson,[28] in 1856, claimed that hypoplasia in the incisal edge of the upper central incisors was caused by, and constituted a pathognomonic sign of, congenital syphilis. When confronted with the fact that typical Hutchinson's teeth were found in families where syphilis could not be detected, he gave the explanation that Hutchinson's teeth were definitely pathognomonic only when associated with interstitial keratitis and otitis-media (Hutchinson's triad). Later Fournier[27] associated hypoplasia in the occlusal surface of first molars with congenital syphilis. After this, most dental defects, hypoplastic or not in type, were looked upon as indications of syphilis.

40. Hess, A. F., and Abramson, Harold, The Etiology of Dental Caries. *D. Cosmos* 73:849 (September) 1931.

41. Gaunt, W. E., and Irving, J. T., Influence of Ca and P Intake on Tooth Formation. *J. Physiol.* 95: 518 (March 11) 1939.

42. Lund, A. P., and Armstrong, W. D., Effect of Low Calcium and Vitamin D Free Diet on Skeleton and Teeth of Adult Rats. *J. D. Res.* 21:513 (December) 1942.

From this extreme state of opinion, syphilis has gradually come to be considered of little importance as a causative agent in dental anomalies. Certain malformations of teeth (barrel tooth, screw driver tooth, peg tooth) are still considered in some instances as signs of syphilis, but the theory that syphilis is a cause of enamel hypoplasia seems to be losing attention and importance in modern dental literature.

This state of opinion should be changed and syphilis should occupy a more prominent place among the possible causes of hypoplastic enamel. The implication, of course, is not that hypoplastic enamel is the specific result of the action of the spirochetes, but rather that it is the result of the serious disturbance of the general and dental metabolism produced by the syphilitic infection.

Why can syphilis be considered a possible cause of enamel hypoplasia? First, because of the time of life in which enamel hypoplasia is produced. In the aforementioned review of possible causes, the fact that most of these conditions did not occur simultaneously with the enamel hypoplasia was seen. What disease is able to attack the fetus and infant, producing such marked disturbances in nutrition and development? Syphilis, congenital or early postnatal, immediately comes to mind.

Syphilis is the only intra-uterine infection plainly demonstrated. No disease causes more abortions or early deaths. Hata[43] found that "of syphilitic women married for at least three years only 60 per cent were impregnated. As a result of these pregnancies there were 28 per cent abortions, 42 per cent living children who died within two years of birth and 30 per cent living children who survived for two years or more." Why then is prenatal hypoplasia so rare? Because precocious syphilitic intra-uterine disturbances are incompatible with life. If syphilis attacks before the seventh month of pregnancy, most probably the fetus will die.

Hypoplasia in the occlusal surfaces of first molars and the incisal third of anterior teeth means that the cause must have acted in the period from birth to the first few months of life. These anomalies suggest the possibility of syphilis as a causative agent.

A different condition exists when hypoplastic defects are found in the gingival third of anterior teeth or in bicuspids and second molars, since, at the time that these defects take place, many diseases and harmful conditions enter into the picture as possible factors in the production of hypoplasia.

It is true that in many statistics found in modern literature syphilis occupies a very inconspicuous place. It should not be forgotten that syphilis is still considered by many persons as a shameful disease, and accordingly they are reluctant to confess that they or their families have suffered from it. I recall two cases in which I was informed by family physicians of the occurrence of syphilis in the family, but I was unable to obtain an affirmative answer in that regard from any member of the household. The aphorism "omnis siphiliticus mendax" (all syphilitics lie) still holds true. Furthermore, serologic reactions may disappear at the time that patients are examined.

Findings in Studies

The findings of Zinsser,[44] in examinations carried out in the clinic in the city of Colonia, are interesting:

Sixty-six persons with notched incisors and hypoplasia in the first molars, age varying from seven to thirty-two years, were examined. In 41 cases syphilis was found to be present whether in the patients or their parents or

43. Hata, S., Ravages of Congenital Syphilis and Its Prevention. *Internat. J. Pub. Health* 2:354 (July-August) 1921.

44. Zinsser, *Afecciones sifiliticas de la boca*. Sociedad Gral. de Pub., Barcelona, 1914.

brothers. From the 41 cases, 33 offered a positive Wassermann reaction; 3 showed marked stigmas of congenital syphilis; the mother of one was suffering avariosic tertiarism; 2 had syphilitic fathers; 2 had luetic brothers. In 16 cases no relation with syphilis was found either in them or in near relatives.

More recently, Anderson,[45] of Yale, presented the results of a study of dental defects found in eight Chinese patients (three men and five women) with congenital syphilis but with no other disease relevant to this study. Undersized teeth were found in seven; enamel hypoplasia in the occlusal and incisal portions was found in five. Besides dental defects, corneal lesions were found in four of the patients and two also had eighth nerve deafness. Consequently, Hutchinson's triad was present in two of the eight patients.

Cavallaro[29] found typical Hutchinson's teeth in twenty-three out of fifty-six cases of congenital syphilis. Sarnat and Shaw[46] have shown that 30 per cent of known congenitally syphilitic children present hypoplasia in the incisal border of the permanent central incisors.

During the period of 1938-1941 I had the opportunity of studying the medical history of twenty patients (fifteen Cubans and five Haitians) having enamel hypoplasia; most of them were inmates of Cuban hospitals and four were mental cases. Three-fourths of them had occlusal and incisal hypoplasia in the permanent first molars and central incisors. The rest of the patients had enamel hypoplasia of the furrow and pit variety in the permanent teeth, except for two who had enamel hypoplasia in the temporary teeth.

A study of the chronologic concomitance of hypoplasia and general systemic diseases in these patients showed: Syphilis was present in four cases. Three patients had syphilitic parents. One suffered from tropical frambesia. Exanthematous diseases, except perhaps in two patients (neither of them having enamel hypoplasia of the incisal or occlusal variety), did not occur at the same time as the hypoplasia. Five patients had suffered from an acidotic condition in periods of calcification in the hypoplastic zones (two of these persons had syphilis). The relation of the hypoplastic lesions and rickets was probable in two cases.

Severe intestinal disorders and vomiting were present in four and perhaps six cases. No other definite cause could be traced in these patients as occurring in the same period as did the hypoplasia. No investigation was made regarding diet and general environmental conditions of the patients.

Acidosis

The relatively frequent simultaneous appearance of hypoplasia and acidosis opens the way to one more factor in the already crowded field of causative agents of hypoplasia. The possibility of acute and chronic acidotic conditions being responsible for many of the 50 per cent of the cases of hypoplasia whose causes are not accounted for should be considered.

A negative calcium balance cannot exist long without producing profound changes in the life processes of the individual; when acidosis develops, calcium absorption and retention practically cease. The calcium metabolism in the dental organ will be affected, and the production of hypoplastic enamel will result.

It is worth noting that vomiting and intestinal intoxications, so frequently found in statistics as being present at the time hypoplasia takes place, have a tendency to produce acidotic conditions. Furthermore, the diet given to some infants is extremely rich in fats. Some researchers have found that, with certain fats (even cod liver oil), the aggregate of calcium, both absorbed and retained, declined to the extent of 50

45. Anderson, B. G., Dental Defects in Congenital Syphilis. *Am. J. Dis. Child.* 57:52 (January) 1939.
46. Sarnat, B. G., and Shaw, N. G., Dental Development in Congenital Syphilis. *Am. J. Dis. Child.* 64: 771 (November) 1942.

per cent in some cases. A regular feeding of relatively large amounts of fats has been shown to increase markedly the urinary ammonia, as well as acetone, diacetic acid and beta-oxybutyric acid, until an acute picture of acidosis, together with vomiting, is present. — *654 Madison Avenue.*

PRESERVATION OF BORRELIA VINCENTI AND CULTURED STRAINS OF TREPONEMA PALLIDUM BY THE LYOPHIL PROCESS

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DURING investigations of the oral spirochetes associated with Vincent's infection, numerous strains of certain of these organisms were obtained in pure culture. It was found that cultures of the smaller oral treponemes could survive under anaerobic conditions, without being subcultured, for periods as long as thirty-one months.[1] However, certain strains of spirochetes considered to be Borrelia vincenti were unable to withstand such treatment. Because of the frequency and number of transfers required to maintain viability, other methods were sought to preserve cultures of Bor. vincenti.

Reports in the literature indicate that attempts to dry spirochetes from the frozen state with maintenance of viability and pathogenicity have been unsuccessful.[2, 3] These observations are contrary to the success obtained in preservation of most of the viruses and bacteria by the lyophil process.

The purpose of this paper is to present a method which has been used successfully for maintaining the viability of certain strains of spirochetes when dried from the frozen state.

Material and Method

Seven strains of spirochetes were employed. Three strains of Bor. vincenti were identified as N-9, N-19 and N-37, and four cultured strains of Treponema pallidum were identified by abbreviations Nog., Ni., Kaz. and E. R. The oral spirochetes were isolated in this laboratory. The Noguchi, Nichols, Kazan and English Reiter strains of T. pallidum were obtained through the courtesy of Dr. R. Wichelhausen, of Johns Hopkins University, School of Medicine.

A liquid medium was developed which served as a menstruum both for cultivation and for lyophilization of these strains of spirochetes. The medium consisted of equal parts of a modified Huntoon's "hormone" broth and a 5 per cent solution of gastric mucin.[4]

The "hormone" broth is essentially a veal heart infusion from which the

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1. Hampp, E. G., Morphologic Alteration of Smaller Oral Treponemes During Aging of Cultures; Effect of Age on Viability of Spirochetal Cultures. *J.A.D.A.* 33:201 (February) 1946.

2. Turner, T. B., Bauer, J. H., and Kluth, F. C., The Viability of the Spirochetes of Syphilis and Yaws in Desiccated Blood Serum. *Am. J. M. Sc.* 202:416 (September) 1941.

3. Stavitsky, A. B., Preservation of Leptospira Icterohemorrhagiae in Vitro. *J. Bact.* 50:118 (July) 1945.

4. Hampp, E. G., Agglutination Studies of the Smaller Oral Treponemes, Borrelia Vincenti and Cultured Strains of Treponema Pallidum. In press.

growth promoting factors are extracted in the presence of a colloidal suspension of agar of 0.1 per cent concentration.[5] "Thio-peptone" was substituted for "bacto-peptone." The medium is sterilized by the fractional method.

The mucin solution was prepared from granular gastric mucin* by the following method: sodium chloride, 8.5 gm., and granular mucin, 50 gm., were placed in 1,000 cc. of distilled water. The mixture was agitated thoroughly until the mucin particles were well soaked and then was stored in a refrigerator at 8 C. for twenty-four hours. At the end of this period, the mucin solution was placed in the Arnold sterilizer at 100 C. for twenty minutes and then was agitated until all the particles of mucin were dissolved. The solution was corrected to pH 7.6, autoclaved at 15 pounds pressure for fifteen minutes (250 F.), cooled to room temperature, filtered through a sterile gauze pad, and dispensed in 100 cc. screw top bottles.

At the time of use, 2.5 cc. of "hormone" broth and 2.5 cc. of the mucin solution were dispensed in 15 x 125 mm. test tubes. The medium was heated in a water bath to drive off residual air, cooled to 45 C. and enriched by the addition of 0.5 cc. of ascitic fluid and 0.5 cc. of a 1 per cent solution of glutathione. This was then inoculated with a plug of agar infiltrated with spirochetes which was removed with a capillary pipet from an actively growing culture of organisms. The cultures were incubated at 37 C. After the spirochetes had reached maximum growth, which usually required five to seven days, 1.5 cc. amounts of the whole culture were transferred to 5 cc. hard glass lyophil bulbs. The suspensions of spirochetes were immediately shell frozen and dried from the frozen state on the cryochem apparatus, according to the method of Flosdorf and Mudd.[6] The dried material was stored in a refrigerator at 8 C.

The strains of spirochetes used in this study were tested for viability, both microscopically and culturally, at intervals of twenty-four hours, sixteen days and seven months after drying from the frozen state. Strain N-9 was not examined at the expiration of the twenty-four hour and of the sixteen day periods because of the limited number of samples of dried organisms that were prepared from the scanty growth in the original culture.

Each dehydrated specimen at the time of examination was restored to its original volume by adding 1.5 cc. of physiologic salt solution; a darkfield preparation and two cultures were made from each strain of spirochetes. Cultures were prepared in 5.0 cc. of "hormone" agar[4] which was enriched by the addition of 0.5 cc. of ascitic fluid and 0.5 cc. of a 1.0 per cent solution of glutathione. The cultures were incubated at 37 C.

Results

In all instances, the darkfield preparations, when examined at the periods indicated, revealed, with the exception of strain N-9, large numbers of spirochetes with typical morphologic characteristics. No evidence of fragmentation was noted in any of the organisms. There was no demonstrable motility of the organisms even though each microscopic preparation was observed at frequent intervals during the course of one hour. As previously reported, loss of motility does not necessarily imply loss of viability.[1] This observation was substantiated in this investigation by subsequent cultures of nonmotile organisms.

The results obtained when the different strains of spirochetes were cultured at various periods after drying from the

5. Hampp, E. G., A Method for Routine Isolation and Cultivation of the Smaller Oral Treponemes. *J.A.D.A.* 30:1066 (July) 1943.

*Wilson's gastric mucin 1701 W.

6. Flosdorf, E. W. and Mudd, S., An Improved Procedure and Apparatus for Preservation of Sera, Microörganisms and Other Substances—The Cryochem-Process. *J. Immunol.* 34:469 (June) 1938.

Results obtained on the cultivation of strains of Borrelia vincenti and Treponema pallidum dried from the frozen state

Strain of spirochetes	Periods at which cultures were made from dried material	Degree of growth at certain hours after inoculation of fresh media							
		24	48	72	96	120	144	168	192
E.R.	24 hours	+	++	+++	++++				
	16 days	+	+	+++	++++				
	7 months	—	—	—	+	++	+++	++++	
Kaz.	24 hours	+	++	+++	++++				
	16 days	+	+	+++	++++				
	7 months	—	—	—	+	++	+++	+++	
Ni.	24 hours	+	+	+++	++++				
	16 days	+	+	++	+++	++++			
	7 months	—	—	+	+	++	+++	++++	
Nog.	24 hours	+	++	+++	++++				
	16 days	+	+	++	+++	++++			
	7 months	—	—	—	+	++	+++	++++	
N-19	24 hours	+	++	+++	++++				
	16 days	—	—	+	++	+++	++++		
	7 months	—	—	—	+	+	++	+++	++++
N-37	24 hours	+	+	+++	++++				
	16 days	—	—	+	++	+++	++++		
	7 months	—	—	—	+	+	++	+++	++++
N-9	24 hours	*							
	16 days	*							
	7 months	—	—	—	—	—	—	—	—

—, no growth; + to ++++, degree of growth; *, not examined at this time.

frozen state are shown in the table. All cultures made at the twenty-four hour period showed a 4 plus growth in ninety-six hours. At the expiration of the sixteen day interval, maximum growth was obtained with strains E.R. and Kaz. in ninety-six hours, Ni. and Nog. in one hundred twenty hours and N-19 and N-37 in one hundred forty-four hours. The frozen and dried specimens were not examined again until the expiration of the seven month period. Maximum growth was obtained with strains E.R., Kaz., Ni. and Nog. in one hundred sixty-eight hours and with N-19 and N-37 in one hundred ninety-two hours. As shown in the table, the lag phase of growth of the spirochetes was increased in all cases during the seven month interval as compared with the twenty-four hour and sixteen day periods.

Strain N-9 was not examined at the end of the twenty-four hour and sixteen day periods after drying but was studied at the end of seven months. At this time only a few spirochetes were demonstrated by darkfield examination; those organisms observed had typical morphologic characteristics but were nonmotile. Cultures of this strain were not viable. The probable explanation for the loss of viability of strain N-9 was the limited number of organisms obtained from the meager growth in the original culture. Drying of organisms from the frozen state is associated with a high mortality

of the test organisms and apparently sufficient spirochetes were not present to insure survival.

Summary

A liquid medium was devised which could be employed both for cultivation and for drying of certain strains of spirochetes from the frozen state. Subsequent darkfield examination of dried specimens of spirochetes showed organisms with typical morphologic characteristics but without motility. However, positive cultures were obtained from all strains of spirochetes except strain N-9. The successful preservation of spirochetes was demonstrated. — *National Institute of Health.*

PLUMMER-VINSON SYNDROME: REPORT OF A CASE

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THE title of this paper suggested itself partly because of the frequency with which patients come into the Oral Diagnosis Clinic at the University of Minnesota complaining of the inability to become accustomed to some recently acquired dental prosthetic appliance, be it fixed or removable. Many of these patients are found to have lesions of the oral tissues which have been treated previously with vitamin B complex preparations on the unjustified assumption that a great majority of such mouth lesions are manifestations of vitamin deficiency diseases.

There is no doubt that a riboflavin avitaminosis may frequently present oral lesions similar to those found in the Plummer-Vinson syndrome, and the dentist should therefore bear in mind the possibility that the lesions may be the result of either condition.

Plummer-Vinson syndrome has long been known by other names, such as hysterical dysphagia, iron deficiency anemia, syndrome of anemia, glossitis and dysphagia. Attention was first called to this syndrome in 1912 when H. S. Plummer[1] spoke of spasms of the upper end of the esophagus and pointed out the necessity of differentiating this condition from organic lesions such as carcinoma. In 1922, P. P. Vinson[2] reported a group of cases under the title "Hysterical Dysphagia." In 1946, W. J. Darby[3] reviewed the literature and cited cases in which he encountered patients, particularly women, with recurrent oral signs and symptoms frequently ascribed to the "subclinical B complex deficiency" and closely resembling the Plummer-Vinson syndrome.

Symptoms

Hysterical dysphagia has been found to occur most frequently in women past the age of 40, the majority of whom have had their upper teeth replaced by a full upper denture. They are usually neurotic and present nutritional disorders, including anemia and glossitis, which

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1. Plummer, H. S., Diffuse Dilatation of the Esophagus Without Anatomical Stenosis. Cardiospasm. Report of 91 Cases. *J.A.M.A.* 58:2013, 1912.

2. Vinson, P. P., Hysterical Dysphagia. *Minnesota Med.* 5:107 (February) 1922.

3. Darby, W. J., The Oral Manifestations of Iron Deficiency. *J.A.M.A.* 130:830 (March 30) 1946.

Vinson attributed to deficiency states developing secondarily from an unbalanced diet because of the inability of the patient to swallow solid food.

The chief symptom as described by the patients is the inability to swallow solid food after the acquisition of prosthetic appliances. Inquiries into the history frequently reveal that many of the patients have had difficulty, perhaps as far back as childhood, in swallowing tablets or pills. They have also developed an aversion to certain foods and gag even at the sight or thought of certain articles of diet. Weight loss is not a prominent symptom inasmuch as these patients acquire their normal caloric intake from such foods as milk, eggs, butter and, in fact, all dairy products. Green vegetables, fruits and meats are seldom eaten, with the resulting nutritional disturbances of weakness and dyspnea, fatigue, palpitation, glossitis and painful fissures in the corners of the mouth. An associated anemia of a hypochromic type is invariably found and aids materially in establishing the diagnosis by presenting additional evidence as to the functional character of the condition.

Diagnosis

The diagnosis of a Plummer-Vinson syndrome, like that of all psychosomatic states, requires a thorough medical study, and neurologic and psychiatric examinations. The presence of the characteristic oral lesions and difficulty in swallowing do not necessarily exclude the possibility of a neurosis nor does the absence of organic signs and symptoms always imply the existence of a hysteria.

As a general rule, it may be stated that no diagnosis of neurosis, hysteria or anxiety state is complete without every effort being made to discover some underlying psychogenic factor. Not infrequently some insidiously approaching disease, organic in nature, is masked under a group of symptoms which are commonly regarded as neurotic. On the other hand, a neurotic person may develop an organic pathologic condition which may be overlooked. I have seen a patient with symptoms of hysterical dysphagia, and all studies, including roentgenograms of the esophagus, were made; yet three years later she was found to be suffering from carcinoma of the esophagus. It is important, therefore, not only to begin with a physical examination, but also to reexamine the patient periodically. A detailed history, with proper evaluation of the whole clinical picture and understanding of the patient's mental reactions and social setting, is necessary.

Report of Case

History.—A woman, aged 59, when first admitted complained of weakness and painful joints, and of having had a dry mouth for the past three to four years. There had been no weight loss. The patient stated that, since the extraction of all her teeth and their replacement by artificial dentures, she had experienced "choking sensations" when trying to swallow solid and semi-solid foods. During the three years after the removal of her teeth, believing her dentures to be the cause of her difficulties, she had had four sets of artificial dentures constructed of different materials. She had made the rounds of dentists and physicians and upon their recommendation had consumed large quantities of vitamin B complex. In 1935, she had had a thyroidectomy. In 1937, she had had angioneurotic edema, and, in 1938, erysipelas. In the past six months, she had taken 50,000 units of vitamin D daily for arthritis.

Examination.—The patient was thin and nervous. Her mouth was edentulous, and she carried four sets of dentures in her purse. There were lesions at the corners of her mouth which were moist and weeping. Her tongue was sore with atrophic papillae and erythematous areas. Complete physical examination revealed nothing else of note. Laboratory studies showed that the hemoglobin was 72 per cent, the red blood cell count 3,890,000, and the white blood cell count 11,000, with normal differential count. Free hydrochloric acid was absent from the stomach.

Treatment.—The patient was advised as to her diet and given brewers' yeast in addition to ferrous sulfate in doses of 0.3 gm. daily. Further treatment consisted of securing the patient's confidence and discussing with her the nature of the disorder.

Outcome.—Treatment over a period of four months was followed by a rise in hemoglobin and a feeling of well-being. The dysphagia slowly disappeared to the point where the patient was eating solid food and could comfortably wear her artificial dentures. The tongue resumed its normal appearance, and to date the patient has not experienced any recurrence of the oral lesions.

Conclusions

This representative case study indicates that a hypochromic anemia with glossitis and commissural fissures may simulate a vitamin B complex deficiency. It suggests the futility of remaking artificial dentures when the dysphagia and associated oral lesions are functional in nature.—*Medical Arts Building.*

STUDIES IN DENTAL PUBLIC HEALTH ADMINISTRATION: I. COST ANALYSIS OF THE NEW JERSEY DENTAL TREATMENT PROGRAM, 1944-1945

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THE dental health program of the New Jersey State Department of Health was inaugurated in 1939 with $6,000 of federal funds. The expansion of the program was the result of organizing local committees to provide facilities for the dental care of children. Because of the poor dental status of the youth of this state, as shown in dental surveys by the State Department of Health and in examinations by Selective Service, individual communities organized dental health committees to seek the means of establishing programs for dental care of children of families of low income. These local committees have representation on the county dental health committee, which in turn is represented on the statewide dental health committee. These are lay committees made up of representatives of health, welfare and educational groups, including component dental societies. The Division of Dental Health of the New Jersey State Department of Health stimulates and coordinates these efforts.[1,2]

Once the dental health organizations have evidenced interest in such a program, a dental survey of the school population is conducted by dentists designated by the local dental society. When the results of the survey are known, a request for a treatment program usually is made. Those children who are eligible for inclusion in the treatment program are ascertained by the use of a formula for the determination of the

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*Dental surgeon, United States Public Health Service.

1. Wisan, J. M., Coordination of Dental Programs. *New Jersey Municipalities* (February) 1945.

2. Nyswander, Dorothy B., New Jersey Citizens Know What They Want. *D. Health.* 6:15 (August) 1946.

dentally indigent.* The type of program is determined by the needs of the community, the geographic and economic circumstances of the locale and the available finances.

Five Types of Programs

Private Office.—Where private dentists are available, the local dental society designates the participating dentists, to whom the eligible children are brought for treatment. The advantages of private offices are (1) the elimination of the necessity for purchasing dental equipment, (2) promptness in starting the program, (3) accustoming the children to private dental offices, (4) more modern equipment than is available in most clinics and (5) furthering the practice of dentistry for all children. The disadvantages of private offices are (1) the disinclination of some private dentists to participate in a public program, (2) the tendency to excessive lost time with poor administration and (3) the difficulties of transportation, if the office is not convenient to the school.

Urban Clinic.—This type of program is utilized in industrial areas. Its advantages are (1) the minimization of the transportation problem where the clinic is centrally located, (2) comparatively simple administration and (3) close association with the school or board of health. The disadvantages are (1) the high initial cost and (2) the salary of the chair assistant.

Rural Clinic.—This type of program has been utilized in a rural county where the central location of two communities made it desirable. Its advantages are that it is (1) less expensive than a trailer or a mobile clinic, (2) convenient, if centrally placed, and (3) comparatively simple in administration. Its disadvantages are (1) the high initial cost, (2) the transportation difficulties in areas not convenient to the clinic, (3) increased lost time because of inclement weather and (4) the salary of the chair assistant.

Trailer.—This type of program is used in a rural community where dental offices are not available and transportation is difficult. The trailer is a completely equipped dental office and is hitched to a truck of the county highway department whenever a new locality must be reached. This type of program has certain advantages: 1. Less time is lost from school since the children may be brought directly from class into the trailer in the school yard. 2. No transportation of the children is required. 3. The treatment program may be integrated more effectively with health education. 4. A greater number of completed cases may be obtained since follow-up is comparatively simple. The disadvantages are (1) greater initial outlay than for any other program, (2) expense for maintenance and (3) difficulty of maintaining comfortable temperature in extremely hot or cold weather.

Mobile Clinic.—The mobile clinic, a dental clinic on a truck chassis, is utilized where the transportation of a trailer by hitching to a truck offers difficulty. Needless to say, the initial outlay is greater than with a trailer program. The advantages and disadvantages of this type of program are the same as with a trailer program. Transportation of a mobile clinic is easier than transportation of a trailer.

Funds

The funds for the treatment programs were derived from three sources: (1) state funds allocated through the annual appropriation bill approved by the governor and the legislature ($50,268.53 or 65.8 per cent); (2) United States Public Health Service funds through

*The formulas vary from county to county. For example, the highest allowable income is $1,900 per year for four members of a family plus $200 for each additional child. The lowest income figure is based on a ratio of $\frac{\text{monthly income} - (\text{rent} + \$13.50)}{\text{number in family}} = \$20$ or less. When this ratio is $20 or less, the child is considered dentally indigent.

Title VI of the Social Security Act of 1939, administered by the state ($16,170.30 or 21.2 per cent) and (3) local funds raised on a county and local basis ($9,967.78 or 13 per cent). The total state, federal and local funds amounted to $76,406.61.

State appropriations for dental health purposes usually offer numerous difficulties. When the initiation of the different phases of the program originates from so-called grass roots, however, the dental administrator does not have the sole responsibility of soliciting funds from the legislature. The use of the lay committee technic assures the program of popular support, with the result that the legislators are informed of the need for funds by the local organizations represented on the various dental health committees. Therefore, the momentum of the program is maintained by the people of the state rather than by the state administrator. The fact that the New Jersey program was one of the few state dental programs that progressed during the war indicates the value of lay dental health committees.

Table 1.—Analysis of expenditure of state and federal funds

Item	Amount expended	Percentage of amount expended
Administrative dentists' salaries	$ 7,224.00	11
Administrative ancillary salaries	4,733.30	7
Clerical office staff	2,718.00	4
Dental health education	1,387.87	2
Depreciation	1,595.00	2
General office	3,432.57	5
Dentists' salaries*	40,889.56	62
Trailer and mobile clinic	2,516.96	4
Travel	1,118.00	2
Miscellaneous and dental supplies	823.57	1
Total	$66,438.83	100

*Dentists' salaries in 1944-1945 were $5 per hour in private offices and $3 per hour in clinics. This has now been increased to $6 and $4, respectively.

Cost Analysis

Since the New Jersey State Department of Health has utilized private dental offices, urban and rural clinics, trailers and mobile clinics in its dental treatment program, it was thought that an analysis of the cost of such programs would be of value to public health authorities contemplating the use of one or more of these types of service.[3, 4]

Tables 1 and 2 present an itemized account of the expenditure of appropriated funds. As previously mentioned, in addition to the $66,438.83, local organizations contributed $9,967.78, which was used on the local program to pay the salary of a dental assistant and to help maintain the program. The item called "administrative dental salaries" includes the salaries of the chief and three part-time supervisors, the latter paid at the rate of $4 an hour. This has now been increased to $6 an hour. The item "administrative ancillary salaries" includes the salaries of one dental assistant, one dental aide, who assists in health education and scheduling of the mobile program units, and one dental hygienist. Since New Jersey has no law authorizing the practice of dental hygienists, the duties of the person given this title consist of dental health education and assisting the dentist. The clerical office staff consists of two full-time clerks with Civil Service classifications of senior clerk and clerk. The travel expenses of the chief and the administrative ancillary personnel are included, at the rate of 5 cents per mile.

Table 2 presents an allocation of the expenditures to the two phases of the program, the educational and consultative phase and the treatment phase. The item designated as "war adjustment" consists of a bonus paid by the state to all full-time personnel because of the increased cost of living.

3. Mustard, H. S., *Government in Public Health*. New York: The Commonwealth Fund, 1945, p. 178.
4. Beck, Dorothy F., *Costs of Dental Care for Adults Under Specific Clinical Conditions*. St. Louis: American College of Dentists, 1943, p. 61.

Table 3 presents a report of the work which was performed in the treatment program. The ages of the children who received initial treatment were between 5 and 10 years. Maintenance treatment was given to older children previously treated in the program.

The analysis of the cost of the treatment program is presented in Tables 4, 5 and 6. For purposes of general comparison, separate tables were prepared for private office programs, urban and suburban programs and rural programs. Interested persons provided private cars for use in connection with the treatment programs in rural clinics and private dental offices. Some boards of education provided school buses, and in one county the Red Cross Ambulance Corps donated the use of a station wagon. Since the expenses for such transportation could not be estimated they are not included in the costs. It will be noted that although the direct expenditures in the private office programs theoretically should be five times the number of dentist hours, the item is usually greater. This is due to lost time, that is, time set aside by the dentist for the treatment program, during which no dental work was performed. Since this loss usually was caused by factors over which the dentist had no control and in which he ordinarily would have been able to schedule private patients, he was reimbursed at the regular rate. Because of the importance of the factor of lost time in the efficiency and cost of a dental treat-

Table 2.—Analysis of expenditure of state and federal funds

Item	Educational and consultative program	Treatment program	Total
Chauffeur-clerk, mobile clinic	.....	$ 1,800.00	$ 1,800.00
Chief*	$ 1,100.00	3,300.00	4,400.00
Clerk-stenographers*	679.00	2,039.00	2,718.00
Dental aide	350.00	1,150.00	1,500.00
Dental assistant	.....	833.30	833.30
Dental supplies	.....	823.57	823.57
Dentists' salaries	7,183.30	33,706.26	40,889.56
Depreciation	.....	1,595.00	1,595.00
Educational material	849.26	.....	849.26
In-service field orientation	100.00	.....	100.00
Miscellaneous*	64.25	190.00	254.25
Office equipment*	12.13	40.00	52.13
Office rent*	210.00	630.00	840.00
Office supplies*	115.93	347.80	463.73
Printing	438.61	504.46†	943.07
Senior hygienist	2,400.00	.....	2,400.00
Statistical services	790.00	.....	790.00
Supervisors	.....	2,824.00†	2,824.00
Trailer insurance	.....	100.00	100.00
Trailer maintenance	.....	230.95	230.95
Travel*	300.00	818.00	1,118.00
Vehicle transportation	.....	386.01	386.01
War adjustment*	176.00	352.00	528.00
Total	$14,768.48	$51,670.35	$66,438.83‡

*These items were considered as central office expenses. Since it was estimated that 75 per cent of the personnel's time was devoted to the treatment program, approximately 75 per cent of these items was charged to the treatment program and the remainder was charged to educational and consultative activities.
†These expenditures were also central office expenses but were definitely allocated to the treatment program.
‡Of this amount, the sum of $16,170.30 is Title VI federal funds.

Table 3.—Dental treatment program, July 1, 1944-June 30, 1945

Location; type of program*	Year begun	Communities	Dentists	Dentist hours	Children treated	Visits	Operations					Treatment completed
							Extractions		Fillings: silicate and amalgam	Other operations	Total	
							Permanent	Deciduous				
Atlantic P & M...	1943	5	2	207	134	421	56	163	897	129	1,245	123
Bergen P...	1943	9	4	185	87	282	10	71	441	88	610	52
Burlington P	1942	12	7	230	204	423	24	281	359	120	784	151
Camden P & M...	1942	8	4	431	344	1,025	110	487	921	314	1,832	208
Cape May P & M...	1942	3	3	149	111	196	25	94	302	85	506	79
Cumberland P.....	1942	6	2	184	119	329	23	115	179	103	420	63
Hunterdon R.....	1940	43	1	489	483	1,282	53	430	646	568	1,697	311
Middlesex P & T....	1942	6	4	530	337	1,019	84	438	665	355	1,542	130
Monmouth P.....	1941	17	11	1,237	557	1,996	156	767	2,597	628	4,148	420
Morris P...	1943	18	6	447	182	756	53	231	757	164	1,205	111
N. Arlington U.....	1940	1	1	755	396	1,878	13	235	1,314	1,233	2,795	383
Ocean P....	1942	5	4	143	54	183	24	104	205	57	390	34
Orange U...	1942	1	3	630	534	1,043	45	261	713	167	1,186	118
Passaic P...	1942	1	1	160	78	296	10	89	431	72	602	39
Paterson U.	1941	1	1	1,267	590	2,498	198	1,062	2,472	1,281	5,013	503
Somerset T.	1942	14	1	905	497	3,971	48	428	1,250	631	2,357	405
Sussex P...	1942	10	5	191	120	272	44	165	230	31	470	52
Union U...	1942	2	2	28	213	771	21	221	614	139	995	49
Warren P...	1943	9	5	72	54	101	17	56	83	24	180	24
Total.....		171	67	8,540	5,094	18,742	1,014	5,698	15,076	6,189	27,977	3,255

*Locations are counties with the exceptions of the cities of North Arlington, Orange and Paterson. The following is a key to the type of program: M—mobile clinic; P—private office; R—rural clinic; T—trailer, and U—urban clinic.

ment program, an analysis is being performed by this department to determine how this factor may be reduced to a minimum. In the direct expenditures of the other types of programs, the cost of overhead, dental assistant and depreciation of equipment (based on 10 per cent of the original investment a year) was included.

The cost of a treatment program does not consist solely of expenditures such as salaries, overhead, supplies and depreciation. Since the time and efforts of the state dental administrator and his staff are directed toward the initiation and maintenance of the treatment programs, part of their expenses should be included. These and other similar items are indicated in Table 2. A total of $11,045 of central office expenses was charged to the treatment programs. In order to distribute this amount proportionally to the various parts of the treatment programs, an hourly central office expense was determined by dividing this sum by the total number of operating dentist hours (8,540), giving $1.29 an hour. This was distributed throughout

Table 4.—Cost analysis of treatment programs in private dental offices

Location	Children treated	Dentist hours	Operations	Treatment completed	Direct expenditures*	Central office expenses, prorated	Direct and hidden cost	Cost per child	Cost per operation	Percentage of cases completed
Atlantic	11	30	83	8	$ 157.50	$ 38.70	$ 196.20	$17.83	$2.36	73
Bergen	87	185	610	52	875.00	238.65	1,113.65	12.78	1.83	60
Burlington	204	230	784	151	1,186.25	296.70	1,482.95	7.27	1.89	74
Camden	187	217	854	109	1,087.50	279.93	1,367.43	7.31	1.60	58
Cape May	91	103	355	64	777.50	132.87	910.37	10.00	2.56	70
Cumberland	119	184	420	63	1,032.50	237.36	1,269.86	10.67	3.02	53
Middlesex	148	328	919	88	1,665.00	423.12	2,088.12	14.11	2.27	59
Monmouth	557	1,237	4,148	420	5,869.75	1,595.73	7,465.48	13.40	1.80	75
Morris	182	447	1,205	111	2,296.25	576.63	2,872.88	15.79	2.38	61
Ocean	54	143	390	34	730.00	184.47	914.47	16.93	2.34	63
Passaic	78	160	602	39	797.50	206.40	1,003.90	12.87	1.67	50
Sussex	120	191	470	52	1,007.50	246.39	1,253.89	10.45	2.69	43
Warren	54	72	180	24	355.00	92.88	447.88	8.29	2.49	44
Totals and averages	1,892	3,527	11,020	1,215	$17,837.25	$4,549.83	$22,387.08	$11.83	$2.03	64

*Both state and local contributions. Cost of dentists' time, operating as well as lost time.

the programs by multiplying the hourly expense by the number of operating dentist hours in each program. This item appears as "central office expenses, prorated." When this is added to the direct expenditures in each program, the total direct and hidden cost is obtained. From this total cost the cost per child and per operation were obtained.

A total of $61,638.33 was expended for the dental *treatment* program in the fiscal year 1944-1945. Of this sum, $51,670.55 was contributed by the State Department of Health, the remaining $9,967.78 coming from local contributions. The percentage of children whose treatment was completed (those who obtained all necessary fillings, extractions and prophylactic cleanings) was obtained from $\frac{\text{number of children completed, } 3,255}{\text{number of children treated, } 5,094} \times 100 = 64$ per cent. The range was from 22 per cent in the Orange suburban clinic to 97 per cent in the North Arlington urban clinic. The cost per child was calculated from $\frac{\text{total expended for treatment program, } \$61,638.33}{\text{number of children treated, } 5,094} = \$12.10$. The cost per operation was obtained from $\frac{\text{total expended for treatment program, } \$61,638.33}{\text{number of operations, } 27,977} = \$2.20$. Included in the column entitled "operations" are fillings with amalgam or silicate cements, extractions of permanent and deciduous teeth, prophylactic cleanings and roentgenograms.

The comparison of the costs of the different types of programs does not lend itself readily to exact interpretation because of a number of variables (Table 7). The amount of lost time is of great importance. The cost per child is readily influenced by the amount of work performed. The cost per operation also is influenced by the amount of treatment required, since a greater amount of dental care usually necessitates more complex and therefore more expensive treatment.

Needless to say, in a well functioning program the lost time gradually is reduced, and over a period of time incremental rather than initial defects will be treated, thereby reducing the cost both per child and per operation. Both the

Table 5.—Cost analysis of treatment programs in urban and suburban clinics

Location	Children treated	Dentist hours	Operations	Treatment completed	Direct expenditures*	Central office expenses, prorated	Direct and hidden cost	Cost per child	Cost per operation	Percentage of cases completed
Clark Township	194	269	884	47	$ 2,100.00	$ 347.01	$ 2,447.01	$12.61	$2.77	24
Kenilworth†	19	59	111	2	900.00	76.11	976.11	†	†	†
North Arlington	396	755	2,795	383	2,870.00	973.95	3,843.95	9.71	1.38	97
Orange	534	630	1,186	118	4,739.00	812.70	5,551.70	10.40	4.68	22
Paterson	590	1,267	5,013	503	6,655.00	1,634.43	8,289.43	14.05	1.65	85
Totals and Averages	1,733	2,980	9,989	1,053	$17,264.00	$3,844.20	$21,108.20	$11.75	$2.04	61

*State and local contributions for dentists' salaries, supplies, rent, depreciation, electricity and chair assistant.
†In operation only a short time and therefore not included in computing averages.

program in North Arlington and in Hunterdon County, which by 1945 had been in operation for five years, had relatively low cost per child. North Arlington had a low cost per operation and the highest completion percentage, but this was not true for Hunterdon County. The comparatively low completion percentage in Hunterdon County (64 per cent) compared with North Arlington (97 per cent) may be explained in part by the number of children taken care of in each program and the number of dentist hours. In Hunterdon County only one hour was spent per child, and in North Arlington two hours were spent per child.

The importance of allotting sufficient dentist time to each child is also seen in the trailer program. The trailer was utilized during ten months of the year to provide treatment for 497 children of families of low income in Somerset County. Of this number, 405 (82 per cent) were given complete treatment. During the months of July and August the trailer was sent to a summer camp for children of families of low income. Treatment was completed in 42 (22 per cent) of 189 cases. The obvious conclusion is that unless sufficient dentist time is allotted to a treatment program, the percentage of completions is low.

Table 6.—Cost analysis of treatment programs in rural clinics, trailers and mobile clinics

Type of program	Children treated	Dentist hours	Operations	Treatment completed	Direct expenditures*	Central office expenses, prorated	Direct and hidden cost	Cost per child	Cost per operation	Percentage of cases completed
Rural clinic, Hunterdon County	483	489	1,697	311	$ 3,660.00	$ 630.81	$ 4,290.81	$ 8.88	$2.53	64
Trailer	686	1,107	2,980	447	6,538.00	1,428.03	7,966.03	11.61	2.67	65
Mobile clinic	300	437	2,291	229	5,322.28	563.73	5,886.01	19.62	2.57	76
Totals and Averages	1,469	2,033	6,968	987	$15,520.28	$2,622.57	$18,142.85	$12.35	$2.60	67

*State and local contributions for dentists' salaries, supplies, depreciation, moving trailer, rent of clinic and chair assistant.

Table 7.—Comparison of costs of different types of programs

Type of program	Cost per child	Cost per operation	Percentage of cases completed
Private dental office	$11.83	$2.03	64
Urban and suburban clinic	11.75	2.04	61
Rural, urban and suburban clinic	11.46	2.17	61
Rural clinic, trailer and mobile clinic	12.35	2.60	67
Trailer	11.61	2.67	65
Mobile clinic	19.62	2.57	76

After the program has been in operation a few years, insufficient dentist time also will be revealed by a relatively high percentage of extractions of permanent teeth. For example, in Camden County (a program in operation for three years by 1945) there were 110 permanent teeth extracted for 344 children treated, a rate of 32 per 100 children treated. In North Arlington there were 13 permanent teeth extracted for 396 children, a rate of 3 per 100 children treated (Table 3).

Comment and Conclusions

Although the data herein presented have been drawn from programs which have been functioning, on the average, only three years, and although the results of only three rural programs are included, certain tentative conclusions can be drawn.

The cost of operating a rural mobile program, as measured by the cost per child and per operation, appears to be greater than that of operating a private dental office program or urban-suburban clinic program, but the percentage of completed cases also tends to be greater (Table 7). This was to be expected because the depreciation of equipment is included in the cost, although lost time tends to be greatly reduced when the dental facilities are brought to the schools and the treatment program is coordinated with the teaching schedule. The cost of transporting the equipment in rural areas is certainly a significant factor.

One point stands out in comparing various dental programs. The skill, speed and attitude of the individual dentist cannot be discounted when analyzing the cost of a dental treatment program. Also, the efficiency of administration of individual programs is greatly dependent on the ability of the personnel in charge.

Since true values can be determined only after long term studies, it is expected that the Division of Dental Health of the New Jersey State Department of Health will publish reports annually. In this way, more conclusive appraisals of the program may be obtained.—*Broad Street Bank Building.*

APPLICATION ON A STATE LEVEL OF THE A.D.A. PUBLIC HEALTH POLICIES

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WITHIN the comparatively short space of the past twelve or fourteen years, the dental profession has witnessed a greatly increased interest in public health. One of the most recent evidences of such interest is seen in the adoption by the American Dental Association of four public health policies in October, 1944. The preparation of these policies by the A.D.A. Council on Dental Health has justified the existence of that group, even if it were never to do anything else. By the adoption of the policies, the members of the House of Delegates of the American Dental Association marked themselves as courageous, far-sighted, and genuinely interested in one of the major health problems of our time.

The American Dental Association later climaxed its good intentions by sponsoring in the Congress of the United States two important bills designed to put their policies into practice.

I shall discuss the application on a state and local level of the four A.D.A. public health policies and include a review of the program now in operation in Minnesota. We have by no means found solutions to all of our problems in Minnesota, nor can we recommend all of our practices for nationwide use; but I believe we are on the trail that leads to answers to some of the chief dental health problems facing every state. Now that the American Dental Association has set up the guideposts, I am sure that all dental health directors will follow in the directions indicated. It is to the everlasting credit of the members of the American Association of Public Health Dentists that they rejected two years ago a suggestion that they prepare a plan for a national dental health program. The members felt that the American Dental Association should first set up policies approved by the majority of the organized profession, after which dental health directors could do their part by suggesting practical means for putting the policies into effect.

Dental Research

The first A.D.A. public health policy reads as follows: "Adequate provisions should be made for research which may lead to the prevention or control of dental diseases." I shall discuss the applications of this policy at the state level, with special reference to some of the things we are doing.

Dental research should include many things besides work done in a research laboratory. There is much to be accomplished on state and local levels in regard to administrative methods and the best technics of employing various kinds of personnel to operate public health dental programs. There is need for continuous research in the topical application of fluorides to the teeth of children and in the experimental use of fluorine in drinking water. There is need for research in various plans of payment for dental services, methods of practice, use of auxiliary

Read before the Baltimore City Dental Society as the second in a panel of three papers, February 11, 1946. The bills to which reference is made were those before the Seventy-Ninth Congress.

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personnel and similar studies now under consideration by state dental health directors and the Council on Dental Health of the American Dental Association.

Dental Health Advisers

Our first effort in administrative research in Minnesota concerned the use of a dental health adviser in two adjacent counties. We set out to determine if the dental health educational program could be made more effective by the employment of persons whose duties were confined to the dental program in areas already employing public health nurses. The study was started in January, 1942, and is about to be terminated. Our two dental health advisers are dental hygienists, although we asked our State Civil Service Department not to require training as a dental hygienist for these positions, because teachers, nurses, or others might prove desirable for the field. We chose hygienists for our first two positions because of their already demonstrated interest in dental health. The two girls have worked in the field during the school year and during the summer months they have attended the School of Public Health at the University of Minnesota. Each has now acquired the degree of Bachelor of Science with a major in public health.

The duties of the dental health advisers as outlined by the State Civil Service Department are as follows: A dental health adviser contacts school teachers to encourage the teaching of dental health in classrooms, but does no classroom teaching herself; meets with school administrators to inaugurate or improve dental health programs; visits dentists and reviews reports on community dental health programs; checks on accuracy and completeness of dental health records; assists public health nurses in their work with the program; evaluates administrative procedures in schools in referring children to dentists and in making reports on dental care programs; contacts official and non-official health and welfare agencies on behalf of the program; works with school and civic organizations in the education of adults and general promotion of the program, giving brief talks and holding conferences; makes no home calls, as these are a function of the public health nurse.

After a three-year test of using a dental health adviser in two adjacent counties with a combined population of 35,000, we concluded that she could cover a larger population. Therefore we extended her duties to cover a third county, bringing the total population to 60,000. A year's experience showed that this area was a little too large for the intensive type of program that she must conduct. The ideal area to be covered by a dental health adviser would probably have a population of about 50,000, although the distances to be travelled, the number of rural schools to be visited and other such factors would need to be considered.

Results of Program

One of the notable achievements under this program has been a marked increase in the number of children whose dental needs are cared for. In one county, the number of children in the rural areas who completed the school year with teeth in satisfactory condition increased over 80 per cent within five months after a dental health adviser assumed her duties. While the state average for certified dental corrections is around 50 per cent, corrections in this dental health adviser's area average over 70 per cent and have shown a steady year-by-year increase, despite war conditions that have greatly depleted the supply of dentists. The average number of children cared for by dentists decreased in many parts of the state during the war because of demands of adults upon dentists who remained in civilian practice. Our observations indicate that the dentist who cares for 150 child patients

a year considers that he has a large children's practice. In the area where this one dental health adviser works, each dentist attends an average of 207 children a year. There is, of course, a limit to the number of child patients that dentists can care for annually. We should learn what that limit is for each community and for the state as a whole.

The public health nurses in the counties included in the area in which the above study was conducted did good work in promoting dental health, but with their heavy load of miscellaneous duties they could not possibly devote adequate time to the dental program, especially in the rural areas. Excellent working relations have been maintained between our dental health advisers and the nurses and other professional people. It appears that the right type of girl with the proper training can conduct very effective dental health educational programs.

Dental health advisers may also be employed in dental care centers for educational work and for giving prophylaxes and treating children's teeth with topical applications of sodium fluoride on a wide experimental basis in order to add to our knowledge of this promising preventive treatment.

Fluoride Studies

Fluoride studies were undertaken in Minnesota by Dr. John W. Knutson of the United States Public Health Service when he was assigned to the Division of Dental Health. His pilot study,[1] using eight to fifteen applications of a 2 per cent solution of sodium fluoride to the teeth of 289 children, showed a reduction of 40 per cent in the incidence of dental caries in the treated teeth.

A further study has been made on nearly one thousand children in three towns in northern Minnesota during the past year.[2] In one town, one treatment was given with a 2 per cent solution of sodium fluoride; in the second town, two treatments; and in the third town, three treatments. A prophylaxis was given each child before the first treatment but not before subsequent ones. A single treatment showed a 4.9 per cent reduction in the incidence of caries, this reduction being confined to the upper teeth. Two treatments reduced caries by 14.5 per cent for the deciduous teeth and 10 per cent for the permanent teeth. Three treatments reduced caries in the treated quadrants 40 per cent in the deciduous teeth and 20 per cent in the permanent teeth.

We are now planning further studies to determine the minimum number of treatments necessary to produce optimum results. From four to six treatments will probably be necessary, although this number might be reduced if it were feasible to give a prophylaxis before each treatment.

Other Research Projects

Another research project that should be undertaken on the state and local level is the artificial introduction of fluorine into drinking water to bring the fluorine content up to one part per million—the level at which the fluorine appears effective in caries prevention without mottling the enamel. Several cities have already begun such studies, and others should be encouraged to do so.

We also need to encourage intensive research in the causes, prevention and treatment of pyorrhea. There is little use in saving the teeth from loss by caries, only to lose them later as the result of pyorrhea.

Statistical studies should be promoted in order to learn the dentist-population ratio in every county and community of

1. Knutson, J. W., and Armstrong, W. D.: Effect of Topically Applied Fluoride on Dental Caries. Pub. Health Rep. 58:1701, November 19, 1943.

2. Jordan, W. A.; Wood, O. B.; Allison, J. A.; and Irwin, V. D.: The Effects of Various Numbers of Topical Applications of Sodium Fluoride. J.A.D.A. 33:1385 (November 1) 1946.

the nation. We particularly need to learn this ratio in the age group from three to seventeen years inclusive, for it is in this age group that we hope to meet the future national need for dental care. We should find out the number and percentage of these children who are regularly receiving adequate dental care, and the number and percentage of decayed, missing and filled teeth in typical communities in each state. Unfortunately, the pre-induction dental examinations of the millions of young people entering the armed services were not made in a way that would give us this valuable information.

Health agencies undertaking studies of growth and development of children and studies of community health should be encouraged to include dental health in their observations. For the most part, dental health has been regrettably omitted from such studies in the past.

Dental Health Education

The second public health policy adopted by the American Dental Association reads as follows: "Dental health education should be included in all basic educational and treatment programs for children and adults."

Education of Professional People

Education of all of the health professions to a clear understanding of dental health objectives and methods should be the joint responsibility of dental societies and divisions of dental health. Education of teachers while in service, of school administrators, physicians, dentists, and public health personnel should proceed simultaneously with education of laymen. Similar education should be provided for students planning to enter any of the fields just named.

Dental schools should offer undergraduate courses in general public health, including lectures in public health administration, epidemiology, environmental sanitation, communicable disease control, industrial health, federal and state health organizations, principles of statistics, public health problems and dentistry in public health.

Now is a good time for dental societies to organize special clubs (1) to study federal, state and local methods of financing public health programs and (2) to study all federal legislation pertaining to dental health, especially the A.D.A. bills, the Wagner-Murray-Dingell bill, and the Maternal and Child Health bill. These same clubs could include in their studies general public health subjects such as public health administration, communicable disease control, environmental sanitation, and public health dentistry. Very few people in a community have a good understanding of these problems. Dentists, as members of a health profession, would improve their value to a community and at the same time increase their professional prestige if they would assume guidance in community public health problems of general interest to the people.

It is encouraging to note that the Council on Dental Health of the American Dental Association is now planning to publish a manual for dentists. This manual will be useful in promoting consistency in the dentists' efforts for health education. It should make possible a common understanding of the public health problem and the best means of meeting it.

Although the chief aim of all dental health education is to encourage timely dental care, especially for children, many dentists still conceive its purpose to be the diverting into certain dental services of some of the dollars that are spent for radios, refrigerators, and automobiles. These dentists want such money spent for the replacement of teeth for adults, rather than for prevention by timely care of tooth loss in childhood and youth. This attitude is an understandable one, but it will not help to meet the public health objectives of the profession.

Dental Health Education in Schools

The dental health education program in the schools provides one of the best means of meeting the objectives of the A.D.A. program: prevention of the loss of teeth and maintenance of the health of their supporting structures.

A number of years ago the National Education Association listed its objectives. Health was first on the list. Educators are convinced of the need for teaching health in the schools, but insufficient progress has been made toward such a program. Normal schools do not prepare prospective teachers adequately. Health teaching has been left to physical educators in practically every state and local school system. A serious lag in school health programs will exist as long as the public and the health professions permit administration by persons with such limited training. The situation could be improved by the appointment of properly trained personnel and by legal recognition of the joint responsibility of health and education departments in the preparation of materials and in the general supervision of school health programs.

There is still confusion in some states regarding the proper instructors of dental health. The school teachers should be capable of such instruction provided they are given adequate preparation and acceptable counsel and supervision from their superiors. It does not appear necessary to spend a great deal of time and money to train dental hygienists or public health nurses for classroom teaching. Such people can be used more effectively as dental health advisers, to transmit authentic dental health information to teachers and other educational personnel, to organize school and community dental health programs, and to work with lay groups in promoting dental health knowledge and practices.

In Minnesota, we hope to train a number of dental health advisers for this type of work. No specific course of study for these girls has been prepared, but experience is pointing the way toward the subjects that should probably be included in such a course. Completion of the full university course of two years for dental hygienists is not necessary. Probably a year's work in dental hygiene would suffice, with at least a year of public health training. They need to know something of the principles and methods of pedagogy, although they do not need professional degrees in education. Other useful subjects are child welfare, psychology, sociology, public speaking, writing or journalism and enough electives to give them a broad background for the educational, the public health, and the public relations phases of their future work. We hope in time to work out an acceptable four-year course for prospective dental health advisers, leading to a degree of Bachelor of Science in Public Health.

Dental Health Education of Adults

In all of our plans and projects for improving the dental health education of children and youth, we must bear in mind the parallel need for educating their parents. As field workers constantly remind us, unless a mother is willing to take her child to the dentist and the father is willing to pay the bill, there is little use in persuading the child of the benefits of timely dental care. Dental health education for parents is being furnished by public health personnel, by dentists, and to some extent by other professions. Many dentists, however, stress their personal ideas on the subject to the point of confusing the layman and giving him a somewhat distorted view of the dental health problem. For example, one man will emphasize toothbrushing, to the exclusion of everything else. Another puts little faith in the toothbrush, but constantly recommends vitamins to his patients.

Bringing dental health education into

proper focus and providing dentists with authentic and interesting material to use in educating their patients should be among the chief tasks of the future, to be undertaken jointly by councils on dental health and the dental health divisions of state health departments.

Early in our Minnesota program, we recognized the need for an intensive study of the dental health literature available to lay people. We made a survey of practically all noncommercial dental health literature used in the United States and Canada.[3] In the course of this task we found ourselves wading through a morass of antiquated notions, unproved assertions, half-true statements, glaring contradictions and profitless technicalities. Therefore, it is to be recommended that all materials intended for use in dental health education programs for laymen be checked by dental health experts for accuracy of content, and by educators, psychologists or other competent specialists for effectivenes of presentation. The interests and capacities of the readers must be kept in mind and the material must be clear, brief, nontechnical and written with proper emphasis on the aims to be accomplished.

Dental Care

The third A.D.A. public health policy, and by far the most significant and courageous statement yet approved by a health profession, reads as follows: "(A) Dental care should be available to all, regardless of income or geographic location. (B) Programs developed for dental care should be based on the prevention and control of dental diseases. All available resources should first be used to provide adequate dental treatment for children and to eliminate pain and infection for adults. (C) Dental health is the responsibility of the individual, the family, and the community, in that order. When this responsibility, however, is not assumed by the community, it should be assumed by the state and then by the federal government. The community in all cases shall determine the methods for providing service in its area."

The American Dental Association not only approved this policy, but also sponsored the Aiken-Pepper bill (S. 1099) in Congress. We will discuss each item of the A.D.A. policy on dental care and the proposed national legislation relating to it.

Item A of the policy expresses genuine interest in the dental needs of all people. We all realize that dental care cannot become available to all who need it unless mass preventive measures can be developed. The tremendous backlog of dental neglect and the very limited dental manpower available impose great restrictions on the dental services that can be rendered. These impediments can be partially overcome in the next generation or two by a carefully planned program of dental care for children.

In Baltimore, on the occasion of the Dental Centenary Celebration held in March, 1940, Dr. Thomas Parran, Surgeon General of the United States Public Health Service, summed up the dental health problem and its only likely solution when he said:

"It would seem to me sensible, assuming that we cannot multiply by several times the number of dentists overnight, nor can we secure overnight tremendously increased expenditures on the part of the general population for dental care —granted those two premises, then it seems to me that we can do the best job under present knowledge of preventive dentistry by taking care of the annual crop of new dental defects which appears in grade school children. In a relatively few years, even if only that were done, some of the old folks would have died off and we would have raised a generation in this country of children later to become young adults and adults whose dental needs were met from the begin-

3. Irwin, V. D., and Wilson, N. W.: Evaluation of Dental Health Literature. St. Paul: Bruce Publishing Company, 1942.

ning at a total expenditure of the dentist's time and of the patient's money vastly less than now is being spent in trying to patch up the results of ten, twenty, or forty years of neglect."[4]

Item B under the A.D.A. dental care policy calls for dental care programs based on the prevention and control of dental disease. To execute this policy on a state and local level requires the application in private practice and in public dental care centers of all approved technics of prevention that may develop through dental practice and dental research. It includes the saving of teeth by timely care in the dental office, by regular and effective home care by the patient, and by sensible control of his diet. If and when dental research indicates the effectiveness of topical applications of sodium fluoride, of the introduction of fluorine into the drinking water, or of other tested measures, such measures should be adopted and advocated by the dental profession. Let us make certain that dental research points the way before we advocate any measure to the public.

Item B also includes a statement of the profession's public health program which reads: "All available resources should first be used to provide adequate dental treatment for children and to eliminate pain and infection for adults." The authors of that sentence had a clear understanding of the dental health problem of the nation and the general principle involved in meeting it.

Eight-Point Program

The question is how to make the best use of dental manpower and equipment in order to carry out the public health policies of the American Dental Association. I would suggest the following eight-point program to fulfill our chief objectives:

1. Dental research to decrease the need for dental services.
2. Timely dental care and utilization of accepted methods of prevention.
3. Dental health education to motivate public acceptance of dental health measures.
4. Inclusion of a greater number of child patients in private dental practices.
5. Increase in the number of graduates from dental schools.
6. Increased use of auxiliary personnel, functioning on a basis acceptable to the profession.
7. Use of more dental chairs and other physical equipment in dental offices in order to increase annual service.
8. Employment of dentists on a full or part time basis to give community dental care to all children who for any reason cannot obtain adequate dental care through the private practice of dentistry.

Each of these proposals is in harmony with the expressed principles and plans of the American Dental Association. It is my firm conviction that state dental health directors are advocating nothing and will advocate nothing that does not have the approval of the organized dental profession.

The worth and desirability of each phase of the program proposed for any particular state or community should be studied experimentally. The diversion of enough dental manpower from private practice to full or part time employment in community dental programs is one of the methods that should be thoroughly tested. Such a plan should include special training in dentistry for children and adequate compensation for the dentists so employed.

Given funds for the purpose, it should also be possible to train a large number of dentists to conduct dental care centers where children's needs could be met. Some of the younger men returning from war—men who have never had a private practice and who may not wish to establish one—should be available for salaried positions with the comparative security that Civil Service work offers. These

4. Farran, Thomas: Dentistry as a Health Service. Proceedings of the Dental Centenary Celebration, American Dental Association, Baltimore, March 18, 1940, p. 59.

men could furnish dental services for children in schools, public health centers, or hospitals, or use dental trailers to reach outlying areas.

Chisholm School Program

The school dental service programs now in operation prove the success of this type of service. Under most of these programs, children through the first six grades receive a limited amount of dental care. For instance, in Chisholm, Minnesota, they receive regular prophylaxes, extractions and amalgam fillings for deciduous teeth and first permanent molars.[5] For any other necessary work, they are referred to their family dentists. Older students are referred to their family dentists for all dental care. Dental health education is furnished to all pupils.

Such school programs have been markedly successful in reducing the number of teeth lost by children. In Chisholm, where the program has been in operation for fifteen years, the number of extractions made necessary by neglected decay was reduced from 201 in the school year 1930-31 to 12 in the school year 1943-44. The program is approved by both the school authorities and the local dentists.

State of Maryland

To illustrate the need for a children's dental care program in a specific state, let us consider the state of Maryland. The 1940 census shows a population of approximately 428,000 children in the age group from three to seventeen years inclusive. In 1941, there were 832 dentists in the state, or one dentist to every 514 children in the specified age group. Assuming on the basis of our previous observations that each dentist in Maryland attends 150 child patients in his practice per year, we find that 340,000 children probably do not receive adequate dental care. In other words, about 30 per cent of the child population receive enough dental care and about 70 per cent do not. To take care of the 70 per cent now neglected, it would require, at the rate of 1,500 children per dentist per year, the employment of approximately 200 dentists on a full time basis. In Minnesota, where the ratio of dentists per population is much more favorable, approximately 53 per cent of the children do not get adequate dental care if we figure the percentages on the same basis.

These figures could be changed if all dentists included more children in their practices or if the number of dentists were increased. Adoption of the six other points that I have already outlined would also help. The aim of providing dental care for all children cannot possibly be realized in the immediate future, but the first requirements are facing the problem and establishing experimental studies of various ways of meeting it. We know, too, that there is a wide gap between the need and the demand for dental service. It is the function of dental health education to close that gap by stimulating the demand.

Financing Dental Health Programs

The customary method of financing public health programs, especially since the passage of the Social Security Act of 1935, is (1) by grants-in-aid from the federal government through the United States Public Health Service or the Children's Bureau; (2) by appropriations by state legislatures for the state departments of health; and (3) by local appropriations by county boards, school boards, or city health departments.

Unquestionably, this federated plan[6] of appropriations by federal, state and local governments is here to stay. Little would be accomplished in public health on a community level without leadership and

5. Jordan, W. A.: A Dental Service Program for School Children. D. Health 6:5, February 1946.

6. Brown, S. C.: Federated Planning for Health Care. Oral Hyg. 35:422, March 1945.

financial support from state and federal sources. Facing this fact, the American Dental Association sponsored the Aiken-Pepper bill, S. 1099, which, together with the A.D.A. research bill, S. 190, contains provisions to put into national effect the A.D.A. program of research, dental health education and dental care.

A.D.A. Congressional Bills

The A.D.A. bills provide for a sound public health dental program administered on state and local levels. Such dental health programs would be under close scrutiny by the profession through state, district, and local councils of dental health. Dental members of state boards of health and dental advisory committees would guide the programs and influence their direction. State boards of health have worked with medical societies for many years and are as likely to work cooperatively with state dental associations.

The Wagner-Murray-Dingell Bill

Contrast the advantages offered by the A.D.A. bills with the situation we may face if the new Wagner-Murray-Dingell bill, S. 1606, is adopted with its lack of the public health approach to the dental problem. The Wagner-Murray-Dingell bill leaves too much to regulation, to the understanding and control of one man, and to the chance that the health beneficiaries might become a vociferous pressure group to force a future surgeon general to include more dental services for adults than would be possible under a sound public health policy. It is possible that adult beneficiaries, who would pay the premiums, might demand complete dental services, and that politics would dictate the course thereafter.

The public health approach (adequate dental care for children with relief of pain and elimination of infection for adults) would be impossible to accomplish if pressure groups assumed control. Under the Wagner-Murray-Dingell bill, state health departments might become mere accounting agencies, whose principal business would be filling out numerous changing record forms and serving as a payroll agent to practitioners who would have to work under fee schedules approved by the administrators of the compulsory health insurance system provided in the bill. Under the grants-in-aid bill, on the other hand, we could have a well planned and acceptable public health program that would ultimately solve the nation's dental health problem.

The American Dental Association needs to marshal its members and friends to oppose the proposal of a compulsory insurance system and to assist in the passage of the bills sponsored by the American Dental Association.

Under Item C of the dental care policy appears the statement that the community in all cases should determine the methods for providing service in its area. In public health practice this is routine procedure, especially when the community assumes its share of financial and administrative responsibility. All dental programs should be community programs. State health departments should serve largely as coordinating agencies and in an advisory capacity. It is often necessary and common practice for the state agency to carry on demonstration programs in local areas for the purpose of arousing community interest. In such cases, the state agency finances and supervises the program with the expectation that the community will later assume its financial and administrative responsibility. The school dental health program in Chisholm, Minnesota, already referred to, is a good example of one that is completely financed and controlled by a local community.

Dentists' Participation in the Program

The fourth item of the A.D.A. public health policy stipulates participation by authorized representatives of the American Dental Association in all conferences

that may lead to plans for dental research, dental health education and dental care.

On a state level, this stipulation means that plans for a dental health program should receive the approval of the council on dental health or a similar group of the state dental association. On a local level, such plans should have the approval of the association members in the community, whether or not they are organized as a dental society. To this principle I think all dental health directors subscribe. The broad-visioned policies adopted by the American Dental Association and its sponsorship of congressional legislation to inaugurate a sound national public health program establish a relationship with public health agencies that should forestall any difficulties in program planning.

Dental societies in every state should do everything in their power to carry out the wishes already expressed in the following three points by the American Dental Association on the subject of state administration of dental health programs:

1. That the division or bureau of dental health be adequately supported by appropriations from the state legislature.
2. That the division or bureau of dental health have administrative autonomy on the same basis as other major units in the state department of health.
3. That a dentist be appointed to the state board of health.

I would suggest a fourth proposal: that state dental health directors be placed in the same salary range as directors of the other major divisions or bureaus in a state department of health.

The dental health program of the nation is in its infancy. It will grow and develop rapidly if the A.D.A. policies are accepted by dental societies throughout the country and if the legislation sponsored by the American Dental Association is passed by Congress. On the local level where the proposed services are actually rendered, much needs to be done to obtain acceptance of financial obligations and other responsibilities. A national lay organization, devoting its time and energies solely to the cause of dental health, could bring about community acceptance of dental programs.

Summary and Conclusions

To recapitulate the essential items in applying the A.D.A. public health policies on the state level:

1. The American Dental Association has approved four guiding policies for public dental health programs. To be effective, each of the four policies must function on state and local levels.
2. Dental research on state and local levels may include studies of administrative problems, the training and use of auxiliary personnel, the investigation and development of methods for reducing the magnitude of the dental health problem, and the discovery of the most economical and practical means of meeting those needs that cannot be eliminated by measures of prevention and control.
3. Dental health education should be provided on state and local levels for all groups, including adult lay persons, professional people and children and young people in schools. Accurate and interesting educational materials should be furnished these groups. The appointment of properly trained persons as directors of state health programs in departments of education should be encouraged by all the health professions.
4. Dental care should be promoted primarily through increased private dental attention to children's needs and through public health programs designed to provide dental care for all children who, for any reason, cannot obtain such care in private dental offices. An eight-point program is outlined as a guide in meeting the dental care problem.
5. The most effective method of financing dental health programs is a federated plan, in which contributions

are made by national, state and local agencies. Passage of the two A.D.A. bills now before Congress should do much to provide sound financing of public dental health programs.

6. State dental health programs should be approved by state councils on dental health or by similar groups. A national lay organization devoted entirely to dental health could greatly facilitate realization of the public health aims and policies of the American Dental Association.—*Dental Service, Veterans Administration.*

ADVANCED AGE IN RELATION TO DENTAL CARIES IN WHITE RATS. II.

Clifton A. H. Smith, D.M.D., and C. M. McCay,* Ph.D., New York

THE chemical aspects of aging and the effect of diet on aging in white rats have been reported at length.[1,2] An article on the teeth of white rats of advanced age was published in 1939.[3] Since that time, one other study has appeared and will be considered in connection with this report.

Description of Experiment

The original experiment was designed to demonstrate that rats could be kept alive far beyond their normal life span, through limitation of the energy of the diet so that the intake was kept at a level sufficient for maintenance but not for growth. The present study compares a similar old age or "retarded" group with four "control" groups whose diet was supplemented by four different sources of calories: (1) dried cooked starch, (2) sucrose, (3) dried whole milk and (4) dried beef liver. In both studies the retarded animals far outlived the controls.

The composition of the diets of the retarded group was as follows:

	Per Cent
Cooked starch	20
Cellulose	2
Cod liver oil	8
Lard	7
Alfalfa leaf meal	1
Salt mixture	6
Dry yeast	14
Casein (crude)	27
Dry liver	10
Sucrose	5

The retarded rats were given this diet from the time they were weaned, but only an amount sufficient to keep them alive. Although some were killed at various age levels for pathologic study and some died, a considerable number reached ages far beyond those of the animals allowed a higher caloric diet and having consequently a heavier body weight. (Ten days in a rat's life is equivalent to one year in a human being's.)

The supplemental diets given the control rats were:

This study was supported by the Rockefeller Grant for Research in Longevity, Josiah Macy Foundation, Laboratory of Animal Nutrition, Cornell University, Ithaca, N. Y.

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1. McCay, C. M.: Problems of Aging. Ed. 2. Baltimore: Williams & Wilkins Company, 1942, pp. 680-727.

2. Saxton, John A., Jr.: Biological Symposia, Vol. XI. Lancaster, Pa.: Jacques Cattell Press, 1945, pp. 177-196.

3. Smith, C. A. H.; Light, R. F.; and McCay, C. M.: Advanced Age in Relation to Dental Caries in White Rats. J.A.D.A. 26: 1700, October 1939.

Control I:	
Lard	10 per cent
Starch	90 per cent
Control II:	
Lard	10 per cent
Starch	50 per cent
Sucrose	40 per cent
Control III:	
Lard	10 per cent
Starch	60 per cent
Dry milk	30 per cent
Control IV:	
Lard	10 per cent
Starch	60 per cent
Dry liver	30 per cent

The control groups were given all that they would eat of the supplemental diet each day and were unrestricted in growth. The retarded animals were restricted in growth by being fed only enough to allow an increase of 5 gm. every fifty days, and they averaged half the body weight of control animals of the same age. The basal diet was entirely sufficient in calories, vitamins and minerals. The controls, eating an excess of the common calories used by man (starch, sugar, milk and meat), were given lard and starch to prevent overloading of the kidneys and liver with a diet too high in protein. The retarded animals lived about 50 per cent longer than the controls.

In addition to the groups mentioned, some retarded animals (300, 900 and 1,150 days old) were taken at random and given additional food upon which they resumed growth. Fifty per cent of the control animals and only 10 per cent of the retarded animals were dead at the end of 650 days. Speaking from the standpoint of longevity alone, McCay has drawn this conclusion for the guidance of human beings: "Eat what you should; after that eat what you will but not too much of it."

Findings on Caries Frequency

Table 1 shows the caries frequency in the control groups and the retarded group. In a consideration of these figures, it is well to note that there are no ingredients capable of causing fracture caries in white rats. Some groups sustained caries and loss of teeth throughout their existence, while other groups showed little or no damage.

The possibility of caries susceptibility through inheritance has been raised[4] and cannot be ignored. However, in this study of approximately 500 rats (300 retarded and 200 controls), there seems to be such a definite group variation that we must maintain that these results are the effect of nutritional variation rather than of inherent susceptibility.

One carious tooth in a young animal is as significant as many carious teeth in an older one. The teeth of the older animals remained firmly fixed in the sockets except where they were broken down by caries processes, and many of the extremely aged rats retained some teeth when the opposing teeth were lost. In the seven animals surviving for 1,200-1,400 days, thirty-eight out of eighty-four teeth were in place and were judged to be noncarious.

The retarded rats showed a progressively higher caries frequency from 400 days onward than did the combined controls. With the limited body growth and low caloric diet, the teeth were progressively more susceptible to destruction. The controls fed the dried liver supplement had a much lower incidence of caries than did the other control groups.

In the supplementary studies of retarded animals, four groups were retarded for 300 days and were then given supplementary diets corresponding to the diets given the control groups. The caries frequency in the various groups is shown in Table 2. The sucrose group appeared to have the least caries, followed by the groups being fed the dry liver, high starch and dry milk supplements. One group retarded 900 days and then given

4. Hunt, H. R.; Hoppert, C. A.; and Erwin, W. W.: Inheritance of Susceptibility to Caries in Albino Rats. J. D. Res. 23:385, October 1944.

dry milk had a slightly lower caries rate than did a similar group which was fed fluid milk. Two groups retarded for 1,100 and 1,150 days and then given all they

Table 1.—Caries frequency in 500 rats (200 controls and 300 retarded)

Age in Days	Control Group				Retarded Group			
	Number of Rats Examined	Number of Rats Immune	Number of Carious Teeth	Per Cent of All Teeth Carious	Number of Rats Examined	Number of Rats Immune	Number of Carious Teeth	Per Cent of All Teeth Carious
0-200								
I*	4	3	1	2.0				
II†	4	3	1	2.0				
III‡	4	2	2	4.0				
IV**	4	4	0					
All	16	12	4	2.0	12	12	0	0
201-400								
I	8	6	4	4.0				
II	6	4	3	4.0				
III	8	7	2	2.0				
IV	8	7	1	1.0				
All	30	24	10	2.7	25	20	8	2.7
401-600								
I	14	12	3	1.8				
II	10	9	1	0.8				
III	14	10	5	3.0				
IV	14	13	1	0.6				
All	52	44	10	1.6	16	10	14	7.0
601-800								
I	11	7	10	7.0				
II	20	17	5	2.0				
III	19	14	10	4.0				
IV	19	17	3	1.0				
All	69	55	28	3.3	49	10	146	24.0
801-1,000								
I	3	0	4	11.0				
II	5	3	4	6.0				
III	5	2	11	18.0				
IV	2	2	0					
All	15	7	19	10.0	30	3	153	42.0
1,001-1,200								
I	4	0	11	20.0				
II	2	1	3	13.0				
III								
IV								
All	6	1	14	17.0	35	3	114	27.0
1,201-1,400					7	0	46	55.0
All controls:								
I	44	28	36	6.0				
II	47	37	17	3.0				
III	50	35	30	5.0				
IV	47	43	5	0.9	174	58	481	23.0

*Control I supplement, starch.
†Control II supplement, sucrose.
‡Control III supplement, dry milk.
**Control IV supplement, dry liver.

Table 2.—Caries frequency in retarded rats fed supplemental diets

Diet	Number of Rats Examined	Number of Rats Immune	Number of Carious Teeth	Per Cent of All Teeth Carious	Age Range
(Allowed To Grow 300 Days)					
Supplement I (starch)	10	1	32	27	474-1,047
Supplement II (sucrose)	10	3	17	14	518-1,054
Supplement III (dry milk)	13	2	46	30	471-1,206
Supplement IV (dry liver)	13	5	26	17	553-1,029
(Allowed To Grow 900 Days)					
Supplement III (dry milk)	9	0	38	35	971-1,206
Supplement IV (fluid milk)	10	0	56	46	924-1,227
(Allowed To Grow 1,100 Days)					
No supplement	11	0	68	47	1,100-1,133
(Allowed To Grow 1,150 Days)					
No supplement	7	0	42	50	1,196-1,369

would eat of the basal diet showed a caries rate practically equal to that of the retarded groups of the same age level.

Hodge[5] has reported the effect of a coarse corn meal diet upon seventeen normal and twelve castrated female rats of advanced age (Table 3). The animals were started on the diet at the age of 1 year and were continued on the diet for a period of nineteen months. Hodge noted that the number of carious teeth rose rapidly after the animals had been on the diet for fifteen months (815 days of age). Although his animals had presumably attained their normal body size at the end of one year of normal diet, the period at which the greatest amount of caries began coincided closely with that for the retarded rats of this study.

There may well be a period or phase in which experimental animals are susceptible to caries. The control rats, reaching a peak in body weight at 200-400 days, showed a decrease in caries frequency from 401-600 days; the retarded group, reaching a peak in body weight at 801-1,000 days, showed a decrease in caries frequency from 1,001-1,200 days. The animals living through this period may have been more resistant

5. Hodge, H. C.: Effect of Age on Incidence of Experimental Caries in Normal and Castrate Rats. J. D. Res. 22:275, August 1943.

Table 3.—Effect of coarse corn meal diet on caries frequency in rats (data taken from Hodge[5])

Age in Days	Number of Rats Examined	Number of Rats Immune	Number of Carious Teeth Per Rat	Per Cent of All Teeth Carious
401-600	2	2	0	0
601-800	12	9	8	5
801-1,000	11	1	38	30
1,001-1,200	4	0	27	56

to caries but the final figures show an increase in caries for all older animals.

Comment

Saxton[2] studied the frequency in rats of various disorders, such as chronic pneumonia, otitis media, gastro-intestinal lesions, lymphosarcoma of the lungs, adenoma-like lesions of the hypophysis, tumors, chronic nephrosis, periarteritis, myocardial fibrosis and intracardiac thrombosis. He came to the conclusion that "retardation of growth of rats by restriction of calories alone increased significantly the average life span, and retarded the development of inflammatory neoplastic and degenerative diseases common to the species in old age."

Caries does not seem to follow the same pattern. Even at the highest point in the control groups, tooth destruction does not equal that of the retarded animals of the same age. Both groups seem to evidence a phase in which caries reaches a peak, only to renew its destruction in the older animals. In contrast to the findings on degenerative diseases, caries seems to be correlated with the period of maturation or the establishment of adult body weight. The relative freedom of the control rats from caries points again to a nutritional factor that may limit or control caries.—*350 Madison Avenue.*

Expenditures for Community Health and Welfare.—During 1944 fourteen cities whose combined population totaled approximately 10,083,000 spent $273,436,932, or more than $27 per capita to provide community health and welfare services of all types. Of this total, approximately $8.88 represented the cost of the basic public assistance programs, including expenditures of local public general relief agencies, and services provided under the Federal Social Security Act. An additional $2.30 per capita was spent by other agencies offering relief and services to families and adults, such as institutional care of the aged, programs for transients, travelers and the handicapped, and various other services.

Community health programs of all types (including hospital in-patient care, clinic service, nursing services, and school health programs, etc.) cost a total of more than $11.50 per capita. Approximately $2.28 per capita was spent for children's services, such as institutions and foster homes, day nursery care, and services to children with behavior problems. Expenditures of public recreation departments and private group work and leisure time agencies amounted to $1.88 per capita, and 27c per capita was spent for planning, financing and coordinating services.

These expenditure figures show in concrete terms something of the size and nature of the job which every urban community must undertake, in an attempt to meet the health and welfare needs of its people. Even in "favorable" times, economically, social work represents in financial terms a business big enough to claim the interest of every citizen, and the best planning and management talent of the community.—*Expenditures for Community Health and Welfare. Community Chest & Councils, Inc., pp. 1-2.*

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HAROLD HILLENBRAND, D.D.S., *Editor*

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EDITORIALS

THE ROLE OF FLUORINE IN DENTAL CARIES: SYNTHETIC FLUORIDE TABLETS AND BONE MEAL PREPARATIONS

IT HAS been demonstrated that children living continuously for the first twelve years of life in fluoride areas have a lower caries attack rate than those residing in fluoride-free areas. It has not yet been established, however, that the addition of fluorides to fluoride-free domestic water supplies will produce similar or identical results. Large scale experiments are now being carried out in various parts of the country to determine the facts in this matter.

The mechanism through which fluorine produces a lowered caries attack rate is not known. It has been suggested by Volker[1] and others that fluorine modifies tooth structure so as to confer a degree of caries immunity by reducing the solubility of enamel in the acids which are associated with the caries process. Dean, Jay and others,[2] on the basis of findings which correlate a low frequency of high lactobacillus counts with the presence of fluorides in water supplies, suggest that fluorine, which acts as an enzyme inhibitor, decreases the ability of oral factors to produce the acids necessary to the destructive processes in dental caries.

There is no evidence that this protective mechanism, whatever it is, can be effective through fluoride-bearing water supplies in persons after they have reached the age when the teeth are fully formed. It also has not been demonstrated that the ingestion of fluorine after the teeth are calcified will make the mechanism operative to arrest caries activity in man.[3] Strean and Beaudet[4] have reported some lessening of caries activity in children receiving daily supplements of 3 mg. of calcium fluoride for

1. Volker, J. F., Effect of Fluorine on Solubility of Enamel and Dentin. *Proc. Soc. Exper. Biol. & Med.* 42:725 (December) 1939.
2. Dean, H. T.; Jay, Philip; Arnold, F. A., Jr.; McClure, F. A., and Elvove, Elias, Domestic Water and Dental Caries, Including Certain Epidemiological Aspects of Oral L. Acidophilus. *Pub. Health Rep.* 54:862 (May 26) 1939.
3. Jay, Philip, Fluorine and Dental Caries. *J.A.D.A.* 33:489 (April 1) 1946.
4. Strean, L. P., and Beaudet, J. P., Inhibition of Dental Caries by Ingestion of Fluoride-Vitamin Tablets. *New York State J. Med.* 45:2183 (October 15) 1945.

periods of six to eight months. This study is not conclusive because it is based on totally inadequate data to support the claims made. Until more convincing data are presented, therefore, the use of fluorides in dentifrices, mouthwashes, tablets and lozenges cannot be recommended.

The Atkins report on the practical use of fluorides in dentifrices is not impressive,[5] and Bibby and his colleagues[6] agree that present evidence will not support their use in mouthwashes in an effort to prevent dental caries. Several commercial preparations have recently been offered to the dental profession as dietary supplements in the control of dental caries. These often contain calcium fluoride reinforced with one or more vitamins. Since a synergistic action between vitamins and fluorides has not been fully shown and since the value of vitamins therapeutically in dental caries is not established, the use of these products must be considered empiric and undesirable.

In the same category are preparations containing bone meal and vitamin D. Based on the uncontrolled reports of Harootian[7] and Martin,[8] such preparations have no demonstrated value or usefulness. The Council on Dental Therapeutics of the American Dental Association, in a recent report,[9] did not find either the bone meal preparations or the vitamin-reinforced tablets acceptable at the present time for inclusion in *Accepted Dental Remedies.*

Because of the great popular interest in the potentiality of fluorine as an effective agent of caries control, there is ample opportunity for the exploitation of the public and of the profession through the sale of useless and even harmful preparations. Dentists should examine these products in the light of acceptable scientific evidence before lending themselves to bringing about their widespread use.

DENTAL RESIDENCY PROGRAMS IN VETERANS ADMINISTRATION HOSPITALS

THE Veterans Administration has announced the inauguration of dental residency programs in certain hospitals and field stations. The programs will be under the supervision and direction of affiliated dental schools and will offer courses designed to qualify dentists for the specialties. At the present time, postgraduate courses will be offered in periodontia, prosthodontia and oral surgery. Oral diagnosis, roentgenography, dental medicine and related topics will have a place in these specialty courses. The full details of the Veterans Administration residency program are given in this issue in the section on news of dentistry.

One of the major obstacles to the more rapid development of graduate and postgraduate opportunities in dental education has been the lack of proper facilities. In some measure, this obstacle is overcome through the opportunity of utilizing Veterans Administration hospitals and field stations as teaching centers. The development of this program will be watched with interest because of its potential role in developing greater participation in advanced education in dentistry.

5. Atkins, A. P., Practical Caries Control. *J.A.D.A.* 31:353 (March) 1944.
6. Bibby, B. G.; Zander, H. A.; McKelleget, Mary, and Labunsky, Bertha, Preliminary Reports on the Effect on Dental Caries of the Use of Sodium Fluoride in a Prophylactic Cleaning Mixture and in a Mouthwash. *J.D.Res.* 25:207 (August) 1946.
7. Harootian, S. G., Influence of Administration of Bone Flour on Dental Caries. *J.A.D.A.* 30:1396 (September) 1943.
8. Martin, E. M., Report on Clinical Use of Bone Meal. *Canad. M. A. J.* 50:562 (June) 1944.
9. Council on Dental Therapeutics, Council Announces Decision on Synthetic Fluoride Tablets. *J.A.D.A.* 34:213 (February 1) 1947; Bone Meal Preparations Not Acceptable to the Council. *J.A.D.A.* 34:214 (February 1) 1947.

Lon W. Morrey
Editor

Lon W. Morrey, new editor of The Journal of the American Dental Association, was born October 3, 1891, at Indianapolis. He was graduated from the Chicago College of Dental Surgery, School of Dentistry, Loyola University, in 1923, and entered practice in North Chicago, Ill. He served as school dentist in Lake Forest, Ill., from 1923 to 1927, when he became director of the Dental Division, Illinois State Department of Public Health. In 1928 he became director of the Dental Division, Chicago Board of Health, and in 1933 director of the Bureau of Public Relations, American Dental Association, a post which he has held to the present time. He was lecturer on children's dentistry at the Chicago College of Dental Surgery from 1930 to 1935 and is the author of a number of books and pamphlets on dentistry and dental health

BOARD OF TRUSTEES HOLDS ANNUAL MIDWINTER MEETING IN CHICAGO FEBRUARY 6-9

The midwinter meeting of the Board of Trustees of the American Dental Association was held at the central office in Chicago on February 6-9. Because of the scarcity of convention facilities, the Board of Trustees tentatively selected meeting dates for the 1948, 1949 and 1950 sessions of the American Dental Association. This selection will be confirmed by the House of Delegates at the next annual meeting in Boston. Chicago will be host to the annual meeting in 1948, and San Francisco will be the site of the meeting in 1949. The House will select the 1950 convention site, with the choice falling either on Washington, D. C., or Atlantic City, N. J.

Attendance.—The following officers and members of the Board of Trustees were in attendance at most of the sessions: Sterling V. Mead, president; H. B. Washburn, president-elect; E. B. Penn, first vice-president; B. B. McCollum, second vice-president; M. D. Huff, third vice-president; Harold Hillenbrand, secretary; Roscoe H. Volland, treasurer; C. Willard Camalier, assistant secretary; John J. Hollister, business manager; LeRoy M. Ennis, E. J. Jennings, C. E. Minges, Harold W. Oppice, C. J. Wright, Henry Hicks, William McGill Burns, J. B. Carr, R. P. Thomas, F. S. Shandley, R. C. Dalgleish, Willard Ogle and C. S. Foster.

Memorial.—The Board of Trustees adopted the following memorial on the death of the late H. Edmund Friesell, Dean, School of Dentistry, University of Pittsburgh:

Be it resolved, that the Board of Trustees of the American Dental Association at their meeting on February 6, 1947 at Chicago express their profound sympathy on being informed of the death of H. Edmund Friesell.

Whereas, Dr, Friesell was a former president of the American Dental Association and exerted a profound influence on a large portion of its membership as an outstanding educator in the field of dentistry,

Whereas, Dr. Friesell was a profound scholar, sound thinker, and tireless worker, and with his personal charm was able to accomplish much for the dental profession,

Be it further resolved, that a copy of this resolution be spread on the official record of the American Dental Association and that it be published in THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION and also that a copy be sent to the family of Dr. Friesell.

Life Membership.—The Board approved the recommendation that the total membership of a constituent dental society, including only active and life members, be used when estimating the number of delegates permitted to an individual state society. The previous practice was to use the total number of active members only for this purpose.

Pension Trust Agreement.—The details of the pension trust agreement for employees of the American Dental Association were approved by the Board of Trustees. The plan, which is compulsory for all employees after an initial period of two years' service, becomes effective March 1. The retirement age has been set at 65 years. The Board appointed the following as trustees of the pension fund: James R. Blayney, director of the Zoller Memorial Dental Clinic, University of Chicago, representing the membership at large; LeRoy M. Ennis, representing the Board of Trustees, and Harold Hillenbrand, representing the employees of the Association.

Survey.—The general secretary was instructed by the Board to make a study of all committees and departments of the Association. A progress report will be

presented to the Board at the Boston meeting.

Annual Meetings.—The Board adopted the following recommendation in regard to annual meetings in the effort to secure desirable meeting sites and dates for the annual sessions:

> It is recommended that in the negotiations for the meetings the cooperation of the state and component societies involved shall be secured. Meetings may be held in any cities which provide the requisite facilities, provided the cooperation of the state and component societies involved has been secured.

The Board also approved the program of designating annual meeting sites three years in advance. The House will be asked to give formal approval to this action in Boston. The Board also outlined the program to be held at Boston in connection with the Tenth International Dental Congress, which will be convened simultaneously.

Education.—At the request of the Council on Dental Education, the Board authorized the establishment of a committee on foreign credentials. This committee will evaluate credentials submitted by foreign dental graduates and by students prepared in foreign institutions who wish to begin the study of dentistry in this country. The membership of the committee, appointed by the Council, includes R. W. McNulty, a member of the Council on Dental Education; Harlan H. Horner, secretary of the Council; Charles W. Freeman, Dean, Dental School, Northwestern University; Lloyd E. Blauch, U. S. Office of Education, and J. Hillis Miller, associate commissioner of education of the state of New York.

Bylaws.—The Committee on Constitutional and Administrative Bylaws submitted a progress report which was received by the Board. The Board also commended the committee for the democratic manner in which it conducted hearings on the proposed revision. The Board also took action, to be submitted to the House of Delegates at Boston, in connection with the proposed amendment of the Bylaws increasing the dues by $1 and earmarking this additional revenue for the relief fund. The Board disapproved "the proposed amendment in its entirety," recommending "that the present method of providing relief funds on a voluntary basis be continued."

Honorary Award.—The Board rejected the recommendation of the Committee on Patents and Honorary Awards for a 1947 nominee. No award will be made.

Workmen's Compensation.—The Board authorized the entrance of the American Dental Association, as a friend of the court, into litigation revolving around the application of workmen's compensation laws to employees of individual dentists. The Board authorized similar intervention in a pending case dealing with "secondary picketing" of a dental office. Participation in both cases was authorized because decisions rendered will establish legal precedents in these fields.

Publications.—The Committee on Publications of the Board of Trustees was authorized to undertake a study of the publication of specialty journals by the American Dental Association. Authority was also granted so that negotiations between the Association and various specialty groups could be initiated. A report will be submitted later to the Board of Trustees and the House of Delegates.

Lon W. Morrey, director of the Bureau of Public Relations, was recommended to the Board as editor of the American Dental Association because "he is eminently qualified for the office." The Board unanimously adopted the recommendation and appointed Dr. Morrey for a period of three years.

Dental Officers' Membership.—The following report of the Board Committee on Miscellaneous Business was adopted. The report deals with the status of dental officers on domestic and foreign duty.

The officers serving overseas, according to action of the House of Delegates at the Eighty-Fourth Annual Session, St. Louis, Mo., August 24-26, 1942, have been maintained on the books of the American Dental Association in good standing:

"The Membership Committee recommends that no membership of men in military service shall be forfeited by failure to remit dues during foreign service, and further, the Membership Committee recommends that the state societies adopt the same procedure. . . . It was voted to approve the recommendation." (Quoted from A.D.A. Transactions of Eighty-Fourth Annual Session, St. Louis, Mo., August 24-26, 1942, Supplemental Report of the Board of Trustees, p. 319.)

The officer who served in the continental limits of the United States not covered by the above provision was required to pay his annual dues in the American Dental Association. If he did not pay his dues annually in the American Dental Association during those years, he was automatically dropped from his continuous membership in the Association. This, however, does not preclude him from becoming a member again if his name is presented to the American Dental Association through channels.

The Committee further agrees that any man returning from foreign service prior to the beginning of the A.D.A. fiscal year would be considered as on foreign service until January 1 of the following year, at which time he would be required to pay dues to the American Dental Association.

The Committee further wishes to suggest that the standards for foreign service as set up by the United States War and Navy Departments be the ones used by the secretary's office of the American Dental Association to determine foreign service.

Dental Assistants.—The president was authorized by the Board to appoint a suitable liaison group between the American Dental Association and the American Dental Assistants Association for the purpose of discussing mutual problems.

Budget.—The Board authorized additional expenditures of $49,000. In view of the fact that total expenditure for the current year had been definitely established by the House of Delegates at Miami, the additional funds for appropriations were made possible by recovering the necessary sums from various councils and committees which had current surpluses in their budgets. The sum of $15,000 was also appropriated for use by the Association in cooperation with the Tenth International Dental Congress in Boston. The Ad Interim Committee of the Board of Trustees will administer this fund.

HOUSING PLAN FOR BOSTON TO BE ANNOUNCED APRIL 1

Recent attendance reports at state and regional dental meetings indicate a continued maintenance of record figures and difficult housing situations.

In order to make the best possible use of available facilities, a new plan for the allotment of rooms for the annual meetings of the American Dental Association must be initiated in August for the 1947 session in Boston. Details of the plan will be announced in the April 1 issue of THE JOURNAL, which will contain a coupon to be filled out to apply for reservations. No reservations will be accepted prior to April 15.

HIGH ATTENDANCE FIGURES AT MIDWINTER MEETING

Enrollment figures for the eighty-second annual Midwinter Meeting of the Chicago Dental Society, held February 10-13, reached a total of 13,913 this year, as compared with 12,938 in 1946.

A total of 7,501 dentists attended the meeting this year. Of these, 2,963 were members of the Chicago Dental Society and 4,538 were visitors from the American Dental Association. Others at the meeting were 29 physicians, 28 health nurses, 487 students, 1,800 families of dentists, 1,124 dental hygienists, 269 lay guests, 622 laboratory men and 1,918 exhibitors and representatives.

HAROLD STASSEN STRESSES NEED FOR FREEDOM OF PROFESSION

Harold E. Stassen, former governor of Minnesota, was the principal speaker at the general session of the Chicago Dental Society Midwinter Meeting. Robert I. Humphrey, president of the Chicago Dental Society, presided at the session.

Mr. Stassen told the gathering that more dentists and a greater use of dental health facilities throughout the country are needed. He said that real progress in dental health "can come only if we maintain the independent professional standing of dentistry and shun any proposal that would make dentists, as a whole, employees of the government."

He commended the stand of the American Dental Association against the quota system of admission to professional schools. He said that any departure from "the basic concepts of free and independent professions" would result in the loss both of the objective of health and the present strength of the professions. "We would lose the resourceful, dynamic phases of our existing system and would fail to reach the broader service of professional care."

Mr. Stassen called for greater emphasis on preventive medicine in dentistry through adult education and the schools, and said that dental research needs heavy backing.

He also suggested that the insurance principle of payment for work of exceptionally heavy cost only might be developed.

Other happenings at the meeting included the awarding of a medal to Daniel F. Lynch, chairman of the Committee on International Relations of the American Dental Association, by Umberto Aprile, president of the Argentine Dental Society. The medal was presented on the fiftieth anniversary of the founding of the society, in recognition of Dr. Lynch's services on behalf of Latin American dentistry.

TEMPORARY OFFICERS NAMED AT DENTAL EDITORS' CONFERENCE

Temporary officers were elected and a survey committee was planned at the Conference of Dental Editors, held February 11 in Chicago.

Walter Hyde, Minneapolis, editor of *North-West Dentistry,* was elected temporary chairman of the conference. Otto W. Brandhorst, St. Louis, secretary of the American Association of Dental Editors, was elected vice-chairman, and Mr. L. T. Maloney, Boston, assistant to the president of the Massachusetts State Dental Society, secretary.

The three officers will select a survey committee, which will include representatives from different sections of the country and different types of dental journals, and representatives from the American Association of Dental Editors, to prepare a report on the formation and membership of a permanent organization of dental editors. The survey committee will report at the 1947 annual meeting of the American Dental Association, to be held August 4-8 in Boston.

Approximately one hundred dental editors and representatives of dental journalism attended the meeting in Chicago.

MORE CHILD DENTAL CARE PLANNED AT CONFERENCE

A step toward the establishment of dental health councils in all communities to provide more dental services for children was taken at the Conference on Dental Services for Children, held in Chicago during the Chicago Midwinter Meeting.

The Conference was held under the joint sponsorship of the Council on Dental Health of the American Dental Association and the American Society of Dentistry for Children.

The Conference went on record as requesting that the Council on Dental

Health and the American Society of Dentistry for Children investigate the possibilities for a detailed study to determine the most acceptable method to motivate the dental profession to care for the child patient, and to initiate a program of child care through state councils.

It was voted to conduct a continuing study of methods for making a higher quality of dental service available to children. State boards of licensure were urged to give more thorough examinations in dentistry for children, and dental schools were urged to place more emphasis on children's dentistry in undergraduate training.

Oren A. Oliver, Nashville, Tenn., reported at the conference that nearly 60 per cent of all dental practice today is devoted to the replacement of teeth, leaving insufficient time for treatment and care of children. He said that recent surveys reveal that each American child, on the average, has five or more dental defects.

THIRD DENTAL EDUCATION CONGRESS HELD IN CHICAGO

The Third Congress on Dental Education and Licensure, under the sponsorship of the Council on Dental Education of the American Dental Association, was held in Chicago on February 8.

J. Ben Robinson, chairman of the Council, presided at the morning session, and T. M. Barlow, president of the American Association of Dental Examiners, presided at the afternoon session of the Congress.

The morning session was devoted to papers and discussions of the dental curriculum, the use of national professional qualifying examinations and the aptitude testing program being conducted by the Council. The need of a thorough restudy of the dental curriculum was emphasized, in the light of current extension of dental care and the widening scope of dentistry as a public health measure.

It was pointed out that only fifteen states are authorized by statute to recognize the examinations conducted by the National Board of Dental Examiners, and the extension of this system of qualifying examinations was recommended. The aptitude testing program given in all the dental schools for the first time in the fall of 1946 was represented as a helpful means of determining the mental and manual qualifications which the prospective dentist should possess.

The afternoon session was devoted to consideration of the future of the specialties in dentistry and to the auxiliary agencies of dental practice. The plans of the Council for the approval of specialty examining boards in oral surgery, orthodontia, periodontia, pedodontia and prosthodontia were discussed. The view was voiced that the certification of specialists by specialty boards is preferable to the licensing of specialists by state law.

All of the speakers, in discussing the auxiliary agencies employed in dental practice, urged a period of study under the direction of dental schools in courses approved by the Council.

The Council on Dental Education also held a meeting in Chicago prior to the Congress on Dental Education and Licensure.

COMMITTEE HOLDS HEARING ON REVISED CONSTITUTION

An open hearing on the proposed revision of the Constitutional and Administrative Bylaws of the American Dental Association was held by the Committee on Constitutional and Administrative Bylaws February 9 in Chicago.

The chief points of criticism of the proposed revision centered around the reduction to five members of all regular councils of the American Dental Association, with the exception of the Council on Dental Education and the National

Board of Dental Examiners, and the reduction of the number of councils and committees from twenty-one to sixteen.

Opposition was also registered to the provision that no two members of any council shall be members of constituent societies or federal government dental corps which compose any one trustee district. Percy T. Phillips, New York, chairman of the committee, announced that objection to this provision was so universal that the committee has decided not to include it in the text of the constitution.

Members of the committee are Dr. Phillips, Max E. Ernst, St. Paul, and C. E. Peterson, Rockville, Conn. The text of the proposed revision of the Constitutional and Administrative Bylaws was published in the January 1 issue of THE JOURNAL.

PROSTHETIC DENTAL SERVICE COMMITTEE HOLDS MEETING

The Committee on Prosthetic Dental Service of the American Dental Association met in Chicago during the Midwinter Meeting of the Chicago Dental Society.

H. O. Lineberger, Raleigh, N. C., chairman of the committee, presided.

MEETING HELD TO DISCUSS SURPLUS PROPERTY SALES

A meeting to discuss problems of surplus dental equipment disposal was held in Chicago recently by officials of the American Dental Association and several state societies, and a representative of the War Assets Administration.

Those attending the meeting were John R. Campbell, Chief, Planning Division, WAA; Sterling V. Mead, president, American Dental Association; William McGill Burns, Second District Trustee; Percy T. Phillips, secretary, First District Dental Society, New York; Robert T. Curren, chairman, Military Affairs Committee, Illinois State Dental Society; Willard Ogle, Twelfth District Trustee, and C. Willard Camalier, assistant secretary, American Dental Association.

The meeting was called as a result of protests over the recent surplus property sale in the New York area where many dentists were not notified until three or four days before the date of the sale. The War Assets Administration has now ruled that notices of sale will be sent in time to reach prospective buyers and secretaries of dental societies not later than ten days prior to the date of sale.

Other objections centered on the necessity of dentists standing in line for hours now that surplus equipment is being sold on a first-come first-served basis.

The WAA, to meet this objection, issued for veterans in the New York regional area a ruling that the dentist select a number from a container as the sale opened. The number determines the position in line. At the meeting, on the request of Dr. Curren, it was decided that dentists throughout the country should be given equal opportunity to purchase equipment offered for sale anywhere in the country.

It was suggested that the Washington office of the American Dental Association mail to all state officers and chairmen of military affairs committees the announcement of sales submitted by the War Assets Administration, so that veterans anywhere may attend a sale.

It was pointed out that effective February 28, any dentist with a certificate of discharge from the armed forces became eligible to participate in any surplus property sale. Prior to February 28, only veterans who had been certified by the War Assets Administration were eligible to purchase equipment at a surplus property sale.

All priorities of any variety issued to veterans have been eliminated by the War Assets Administration as of February 28.

A. D. A. AFFAIRS

A.D.A. MEMBERS MUST PAY 1947 DUES BY MARCH 1

All members of the American Dental Association must pay their 1947 dues by March 1. Subscription to THE JOURNAL will be stopped March 1 for any member who has not paid his dues, and he will be dropped from the membership rolls.

After March 1, a dentist who has allowed his membership to lapse can be reinstated only through his state and local dental societies.

NO MORE BACK ISSUES OF JOURNAL NEEDED FOR EUROPE

The Committee on International Relations of the American Dental Association has requested that no further copies of back numbers of THE JOURNAL be sent in to help build up depleted dental files in Europe.

Through an inadvertence, the original story stated that payment would be made for all copies received. The intent was to offer payment only for the limited number of special issues which are in short supply.

DENTAL SOCIETIES

DENTAL HEALTH PLANNING WORKSHOP HELD IN NEW YORK

A workshop in dental health planning was held recently in New York by the council on dental health of the New York State Dental Society, as another in a series inaugurated by the Council on Dental Health of the American Dental Association.

The three day meeting was divided into an opening series of speeches, group discussions in which all the attending dentists took part, and a final meeting to examine the recommendations drawn up by the various groups and to reach a final list of recommendations approved by the entire meeting.

The speakers included John W. Knutson, U. S. Public Health Service, Washington, D. C.; Ellis H. Champlin, New York State Education Department; David B. Ast, New York State Department of Health, and Allen O. Gruebbel, secretary, Council on Dental Health, American Dental Association.

Topics of the group discussions were: Utilization and Expansion of Dental Personnel and Ancillary Personnel; Community Dental Health Programs; Responsibility of the Dental Profession, the City or County Government, School System and Lay Committee, and Experimental or Demonstration Projects.

NEW YORK DENTAL HYGIENISTS WILL HOLD MEETING MARCH 7

The Dental Hygienists Association of the City of New York will meet March 7 at the Hotel Pennsylvania, New York. Ewing C. McBeath, professor of pedodontia, School of Dental and Oral Surgery, Columbia University, will speak on "The Child Dental Patient."

NATIONAL BOARD OF DENTAL EXAMINERS TO MEET APRIL 21

The National Board of Dental Examiners will hold its next sessions for the examination of candidates in Parts I and II April 21-22 in dental schools where there are five or more applicants.

Applications for the examination should come through the office of the dean of the dental school, according to Gordon L. Teall, secretary. For further information write Dr. Teall at Box 71, Hiawatha, Kan.

LATEST DENTAL SOCIETY ACTIVITIES AND MEETINGS

Connecticut.—The Connecticut State Dental Commission will meet in Hartford March 11-15 for the examination of applicants for license to practice dentistry. Applications should reach the recorder at least ten days before the meeting. For applications and further information, write Clarence G. Brooks, Recorder, 302 State St., New London.

Iowa.—The Iowa State Board of Dental Examiners will meet March 17-22 in Iowa City, according to H. G. Bolks, Sioux City, secretary. The annual meeting of the Iowa State Dental Society will be held May 6-8 in Des Moines, A. N. Humiston, Cedar Rapids, secretary, has announced.

Kentucky.—The Kentucky State Dental Association will hold its eighty-seventh annual meeting March 31 and April 1-2 in the Brown Hotel, Louisville. Principal speakers slated for the meeting include W. D. Funkhouser, "Prehistoric Dental Pathology"; Howard R. Raper, "Radiography, Past, Present and Future"; L. D. Pankey, "Practice Management"; E. Romle Romine, "Periodontia," and Oliver C. Applegate, "Better Partial Denture Service for More Patients."

O. B. Coomer, Louisville, is chairman of the executive committee for the meeting.

Louisiana.—A three day workshop will be held March 7-9 in the St. Charles Hotel, New Orleans, by the Louisiana State Dental Society. The purpose of the workshop is the presentation of an opportunity for open discussion of legislative and social topics related to dentistry and is open to the entire membership of the state society.

The state society will hold its annual meeting April 10-12 in New Orleans, according to J. S. Bernhard, Shreveport, secretary.

Maine.—The Maine State Board of Dental Examiners will meet March 1-2 in Augusta, according to R. A. Derbyshire, Skowhegan, secretary.

The annual meeting of the Maine State Dental Society will be held June 5-7 at the Poland Spring House, Poland Springs. The entire meeting will be devoted to the presentation of refresher courses for veteran dental officers, according to Alonzo H. Garcelon, secretary. The chief subjects to be given are prosthetics and oral surgery, with briefer treatment of business management and anesthesia.

Montana.—The reactivation of the dental health program of the Montana State Health Department is a result of the support of the Montana State Dental Society, according to W. J. Pelton of the U. S. Public Health Service.

The society obtained state legislation creating a dental division in the Department of Health, as well as an appropriation of funds to support the new division.

New Jersey.—A workshop on dental health planning will be held March 21-23 in Asbury Park by the council on dental health of the New Jersey State Dental Society, according to Louis Saparito, chairman of the state council on dental health.

The annual meeting of the New Jersey State Dental Society will be held April 27-30 in Atlantic City. The principal speakers on the agenda will be LeRoy M. Ennis, Philadelphia; George D. Greenwood, Rochester, N. Y.; Lewis Citron, White Plains, N. Y.; Henry M. Goldman, Boston; Simon Shapiro, Brooklyn; Douglas B. Parker, New York, and Henry Hicks, Greenwich, Conn.

Ohio.—Edward C. Mills, secretary of the Ohio State Dental Society since 1923 and editor of the *Journal of the Ohio*

Dental Society since its founding in 1927, has resigned his post as secretary because of illness. He will continue in office as editor of the *Journal*.

The Ohio State Board of Dental Examiners will hold its next meeting March 10-13 in Columbus, according to E. D. Lowry, secretary.

Oklahoma.—The annual meeting of the Oklahoma State Dental Society will be held April 13-16 in Oklahoma City, according to E. W. Wise, Tulsa, secretary.

Oregon.—F. L. Utter, Salem, secretary of the Oregon State Board of Dental Examiners, has announced that the next meeting of the board will be held March 3-6 in Portland.

The Oregon State Dental Society will hold its 1947 annual meeting June 5-7 in Portland, according to W. H. Hurley, Portland, secretary.

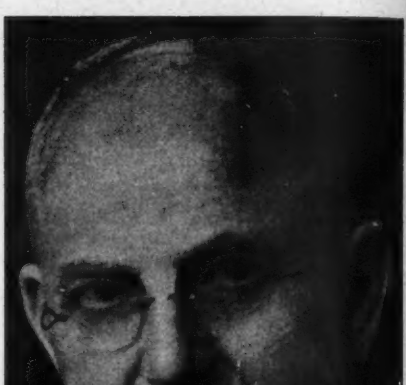
South Carolina.—The South Carolina State Dental Association will hold its annual meeting April 27-29 at the Ocean Forest Hotel, Myrtle Beach, according to J. R. Owings, Greenville, secretary.

The program will include addresses by C. H. Schott, Cincinnati; Sidney Sorrin, New York, and James Harpole, Atlanta, Ga.

Wisconsin.—The seventy-seventh annual meeting of the Wisconsin State Dental Society will be held March 31 and April 1-2 in Milwaukee, according to Kenneth F. Crane, executive secretary.

Speakers at the meeting will include Edgar Coolidge, Chicago, on "Periodontia"; M. M. Fowler, assistant medical director for dental service of the Veterans Administration, on "The Dental Service of the Veterans Administration"; R. G. Ellis, Toronto, Canada, on "Injuries to the Teeth of Children," and Lt. Col. Joseph L. Bernier, Registry of Dental and Oral Pathology, Washington, D. C., on "Carcinoma of the Lip."

The meeting will also include a wide variety of limited attendance clinics.



Resigns as Secretary

Edward C. Mills, secretary of the Ohio State Dental Society since 1923, and editor of the Journal of the Ohio State Dental Society, has resigned his post as secretary. He will continue to serve as editor of the Journal

PUBLIC HEALTH

PUBLIC HEALTH SERVICE TO HOLD TESTS FOR DENTAL SURGEONS

A competitive examination for appointment to the Regular Corps of the U. S. Public Health Service in the grades of assistant and senior assistant dental surgeon will be held in eleven cities April 3-5.

Although the appointments are permanent, officers will be permitted to resign except under national emergency conditions. Assignments within the Regular Corps are made with all possible consideration of the officer's demonstrated abilities and experience, according to W. T. Wright, Jr., Assistant Surgeon General (Dental).

An applicant for the assistant grade must be a citizen, must have had at least seven years of education beyond high school, must have had professional training or experience and must pass a physical examination. An applicant for the senior assistant grade must have, in addition to the qualifications for assistant grade, four years of postgraduate training or experience.

The written examination for the assistant grade will include anatomy and oral surgery, pathology and bacteriology, materia medica and physiology, hygiene and radiology, and operative and prosthetic dentistry. A practical examination in clinical and laboratory demonstrations will also be given. A candidate who has passed the examination of the National Board of Dental Examiners may use those grades instead of taking the written test.

For the senior assistant grade, the examination will include oral surgery, pathology and bacteriology, hygiene, operative dentistry and prosthetic dentistry. No clinical or laboratory examinations will be given, and certificates granted by the National Board of Dental Examiners do not apply to this grade.

The examinations will be held in the following places: Baltimore, U. S. Marine Hospital, Wyman Park Dr. and Thirty-First St.; Boston, U. S. Marine Hospital, 77 Warren St.; Chicago, U. S. Marine Hospital, 4141 Clarendon Ave.; Cleveland, U. S. Marine Hospital, Fairhill Rd. and East 124th St.; Los Angeles, U. S. Public Health Service Relief Station, 406 Federal Bldg.; New Orleans, U. S. Marine Hospital, 210 State St.; New York, U. S. Marine Hospital, Stapleton, S. I.; St. Louis, U. S. Marine Hospital, 525 Couch Ave.; San Francisco, U. S. Marine Hospital, Judkins St. and Fourteenth Ave., and Washington, D. C., U. S. Public Health Dispensary, Fourth and D. Sts.

Application forms may be obtained by writing the Surgeon General, U. S. Public Health Service, Washington, D. C., Attention: Dental Division.

VETERANS ADMINISTRATION

DENTAL RESIDENCY PROGRAM ESTABLISHED IN VA HOSPITALS

A dental residency program has been established by the Veterans Administration and will be started this year with a few pilot residencies in VA hospitals where facilities are available and where the deans of nearby dental schools will cooperate with the plan, M. M. Fowler, assistant medical director for dental service of the Veterans Administration, has announced.

Lyman H. Heacock has been appointed chief of the Research and Training Division, Dental Service, Department of Medicine and Surgery, Veterans Administration, and will administer the program. Dr. Heacock is the former chief of the dental section, Industrial Hygiene Division, U. S. Public Health Service.

The text of the Veterans Administration Circular No. 3, issued January 10, on the dental residency program, follows:

There is established in the VA Department of Medicine and Surgery, a Dental Residency Program which will be conducted in certain VA hospitals and field stations under the supervision and direction of affiliated dental schools, accredited by the Council on Dental Education of the American Dental Association, and approved by the Administrator. These affiliated dental schools have entered into agreement with the Administrator through the Chief Medical Director. . . .

Dental Residency Committee.—The chairman of the Dental Residency Committee will be the

dean of the dental school unless the dean designates a member of his dental faculty to act as chairman. The inclusion of one member of the Medical Deans Committee is for the purpose of facilitating the coordination of the medical and dental residency programs in the hospital.

If, in one area, there is more than one approved dental school participating in a single program in any way, the deans of each will appoint the Dental Residency Committee from among their respective faculties, and select the head of the committee by mutual agreement.

The committee will organize the courses of study for dental residents and shall be responsible for the professional standards to be maintained by those participating. It will supervise and direct the training of residents and the services of teaching consultants and attending dentists in VA hospitals and field stations.

Method of Appointment. —Applications for dental residencies will be referred to the Dental Residency Committee for its review and recommendations to the manager. A personal interview with the applicant may be requested by the Dental Residency Committee. Only applicants whose predental and dental records, and professional experience where applicable, indicate their capacity to profit from postgraduate instruction will be recommended for appointment.

The manager will have the recommended applicant complete the necessary forms for appointment in the Department of Medicine and Surgery. The application papers will then be reviewed by the Dental Resident Review Board . . . for the sole purpose of insuring the applicant's general qualifications for appointment to the Department of Medicine and Surgery. The board will then forward the applications to the manager who will initiate the processing of the approved applications. When processed, the applications will be forwarded to the Deputy Administrator, attention of Branch Medical Director, for information and record, and returned to the hospital manager for file.

Qualifications.—Dentists who are applicants for residency training must be citizens of the United States and must be graduates of schools of dentistry approved by the Administrator. The approved schools of dentistry will be those on the list published by the Council on Dental Education, American Dental Association, for the year in which the course of study at dental schools was completed by the applicant. Applicants for a dental residency need not be licensed to practice dentistry at the time of application provided that such licensure be obtained before the end of the first year of residency. When examination for the license is taken the applicant will be granted official leave for the purpose of taking the examination at no expense to the government.

Types of Appointment. — Appointment as residents will be for a three year period or that fraction thereof required to complete the prescribed course.

Appointment as dental residents will be made in three grades; junior dental resident, intermediate dental resident and senior dental resident. The grade of the specific applicant will be recommended by the Dental Residency Committee. In determining the grade, the Dental Residency Committee may allow up to one year of credit for dentists who have been on active duty as dentists in the armed forces for a period of at least one year, provided such service was of a type to justify the credit. The committee also may allow up to one year's credit for dentists who have taken formal dental graduate or postgraduate training leading to a degree such as a master of science, or to a certificate issued by a school of dentistry, provided such training was of a type to justify the credit, or for a dental internship taken in an approved institution provided the course of training was approved by the Council on Dental Education of the American Dental Association.

Where more than three years' training is necessary to complete the requirements of the prescribed course, reappointment at the end of three years for a similar period or fraction thereof may be made. . . .

Maintenance of Standards. — A Dental Resident Review Board will be established in each VA hospital or field station having a dental residency program. The Board will consist of the Chief of the Dental Service, a Dental Consultant or Attending Dentist nominated by the Dental Residency Committee, and Chief of Professional Services. The chairman will be elected by the board.

The Dental Resident Review Board will

meet at such times as necessary to pass on new applicants recommended by the Dental Residency Committee and to evaluate the progress of all incumbent residents at least once a year. The board will recommend to the Branch Medical Director any change of status of an incumbent. . . .

Upon the recommendation of the Dental Residency Committee, the Dental Resident Review Board will recommend change of grade of incumbent residents who will continue residency training. This change of grade will be based on their status toward fulfilling the requirements of their prescribed course of training.

The Dental Resident Review Board will determine when the period of residency training will end for each individual resident. . . .

Quality of Training.—The dental residency program will be confined at present to the specialties of periodontia, prosthodontia and oral surgery. Oral diagnosis, radiodontics, dental medicine and other related subjects will be included in each specialty course. The scope and quality of training will be such as may be expected to enable the residents successfully to pass examinations for certification by the American specialty boards.

The selection of dental schools and VA hospitals to participate in the residency program will be contingent upon: the availability of qualified teachers in one or more of the specialties of periodontia, prosthodontia and oral surgery; and the availability of sufficient dental clinic space to permit the training of dental residents in VA hospitals in the proximity of dental schools. A dental school may train residents in any one or all of the specialties according to the availability of facilities.

Curriculums.—The dental residency curriculums will be planned to provide whatever training is necessary to qualify the residents as specialists.

Instructions in the basic sciences, of whatever amount is required for eligibility by the individual specialty boards, will be given where conditions are the most favorable in each local situation, but will be offered usually in the dental school, supplemented by opportunities for additional experience and individual study in the laboratories of the hospital. Dental residents will receive the benefit of all of the teaching facilities in the hospital such as seminars, lectures, pertinent staff and clinical conferences, tumor clinics, ward rounds, autopsies, operating rooms, laboratories and visual education aids.

Dental consultants and attending dentists, who are appointed as teachers on the recommendation of the Dental Residency Committee, will be responsible for conducting the educational program, and will utilize the services of the full time dental staff to assist as teachers if, in the opinion of the Dental Residency Committee, the full time staff is qualified and available.

Pay of Residents.— The professional service salary of the dental senior resident will be a sum not to exceed $1,350 per annum, determined by the Deputy Administrator on the recommendation of the Dental Residents Review Board at each hospital. Such salaries will be in conformance with the scale of remuneration of dental residents in civilian hospitals in the locality, if such residencies exist. The professional service salary of the intermediate dental resident will be 75 per cent, and that of the junior dental resident 50 per cent of the salary of the senior dental resident for the specific VA hospital or field station.

In addition to the professional service salary, the resident will be furnished quarters, subsistence and laundry. In the event the resident is not required to live on the station, or quarters are not available, he will be paid an allowance equivalent to the maximum charge for quarters, subsistence and laundry. . . . This requirement will not apply to World War II veterans. . . .

Up to January 3, 1949, all dentists appointed as residents who have rendered active service as dentists in the armed forces of the United States in World War II, because of their experience and the fact that their services will prove more valuable to the VA, will be paid $3,300 per annum. If they live on the station, the cost of quarters, subsistence and laundry will be deducted. . . .

No charge for sleeping accommodations will be made to residents who do not occupy quarters when they are required to remain on the station on a duty status at night.

Subsistence may be provided to all residents not living on the station. . . .

The per annum salary of residents is based on rendition of service each day of the year as may be required by the manager and the

Dental Resident Review Board. The per annum salary of these employees is based on rendition of service or authorized leave status with pay every day of the year. Payments should be made on the basis of 1/26 of the per annum salary, and allowance if authorized, for each regular biweekly pay period. For each day in leave without pay status 1/14 of the amount regularly payable for a pay period should be deducted. No extra amount is payable in addition to the regular per annum rate regardless of the number of hours' service rendered by a resident during a day or by reason of working on a legal holiday. . . .

Affiliated Training.—Affiliated training is that training given at institutions which are schools or colleges of dentistry, accredited by the Council on Dental Education of the American Dental Association which have entered into agreement with the VA through the Chief Medical Director to supervise and direct the training of residents.

Whenever the facilities for training at the field stations of the VA are such that the requirements for the specialty boards of the resident's choice cannot be completely fulfilled, the Administrator may, on the recommendation of the local Dental Resident Review Board, authorize the resident to obtain that portion of the specialty board requirements at a nonveterans' hospital or school recommended by the Dental Resident Review Board, provided that the time, as determined by the Review Board, spent away from the field stations of the VA will not exceed approximately 50 per cent of the time of employment . . . and the character of the duties of the resident will be of such nature that the dental education of the resident will be furthered, in accord with the policy for promoting efficient care for veterans. During this affiliated service, the resident will continue his status in the Department of Medicine and Surgery, with respect to pay, time in grade and all other conditions and consideration of employment. However he will not be required to accept quarters and subsistence provided by the VA if, in the opinion of the Dental Resident Review Board, it is not practicable to do so.

Pay for Affiliated Training.—When training of residents is furnished under the above provisions by a school, hospital, institute or clinic, and charge therefor is made, payment will be made by the field stations of the VA for such training. . . . Such training as may be given at a field station of the VA other than the hospital of assignment will be given by consultants and attending dentists recommended by the Dental Residency Committee and appointed as part time employees of the Department of Medicine and Surgery, VA. Such training will not be construed as affiliated training.

Leave.—Leave regulations for residents will be the same as provided for permanent and probational dentists in the Department of Medicine and Surgery. . . .

Interstation Transfers.—Owing to the present heavy treatment work-load, full time dentists in other than residency positions with the VA may not be transferred for the time being from one VA field station to another for the sole purpose of assuming residency training unless concurrence is obtained from managers, Deputy Administrators and Dental Residency Committees involved. The applications of dentists who cannot be transferred under the above conditions may be filed for future action with the Chief, Dental Division of the branch office in whose area the applicant is stationed. Every effort possible will be made to expedite transfers for this purpose.

DENTAL EDUCATION

UNIVERSITY OF WASHINGTON SEEKS DENTAL LITERATURE

The new dental school of the University of Washington is seeking contributions of literature on dentistry and related subjects in order to build a library as rapidly as possible.

Dental textbooks or textbooks on related subjects, dental journals and all periodic publications, bound or unbound, are requested. Volumes I and II of G. V. Black's *Operative Dentistry* are especially sought.

The material will be placed in the library, and the donor will be credited with a special book plate. Material may be sent collect to the University of Washington, Division of Health Sciences Library, Seattle 5.

New Harvard Dean
James M. Dunning, new dean of the Harvard School of Dental Medicine and associate dean of the Faculty of Medicine. His appointment was announced recently by C. Sidney Burwell, dean of the Medical School

NEW DEAN OF HARVARD DENTAL MEDICINE SCHOOL APPOINTED

The appointment of James M. Dunning as dean of the Harvard School of Dental Medicine and associate dean of the Faculty of Medicine has been announced by C. Sidney Burwell, dean of the Medical School.

Dr. Dunning's appointment followed the resignation of A. LeRoy Johnson as professor of clinical dentistry, associate dean of the Faculty of Medicine and administrative officer of the School of Dental Medicine.

Dr. Dunning, a fellow in public health dentistry at the Harvard School of Dental Medicine for the past year, served in the Navy during the war. Prior to the war, he was president of the dental health service of New York City and also served as assistant in operative dentistry at Columbia University and attending dentist for the Heckscher Foundation for Children.

WASHINGTON UNIVERSITY TO HOLD POSTGRADUATE DENTAL COURSES

The School of Dentistry, Washington University, St. Louis, has announced a series of postgraduate courses in dentistry to be held this spring. Because of limited registration, dentists interested in attending the courses should write the Registrar, Washington University, School of Dentistry, 4559 Scott Ave., St. Louis 10.

The courses are: radiodontics, March 10-15; partial denture prosthesis, April 14-19; anesthesia in dentistry, April 21-26; oral diagnosis and treatment planning, April 28 to May 3; dentistry for children, May 19-24; oral pathology conference, to be held on Wednesday afternoons for six weeks starting April 2, and anatomy of the head and neck, to be held Wednesday evenings for six weeks starting April 2.

GENERAL NEWS

DR. BRAY, PAST ALABAMA STATE SOCIETY PRESIDENT, DIES AT 56

Charles B. Bray, Birmingham, who was president of the Alabama State Dental Association for the year 1944-1945, died on December 26 at the age of 56.

Dr. Bray, a specialist in children's dentistry and orthodontia, had retired from private practice in 1940. He was head of the Procurement and Assignment Service for Dentists in Alabama during the war and served as president of the Allied Health Council.

He was graduated from the Louisville College of Dentistry in 1910.

J. C. BLACK, PAST CHICAGO DENTAL SOCIETY DIRECTOR, DIES

John Cannon Black, 70, Chicago, past director of the Chicago Dental Society and past president of the American College of Dentists, died January 28.

Dr. Black practiced dentistry in Chicago for thirty-eight years. He was a member of the board of directors of the Chicago Dental Society from the Englewood branch from 1935 to 1938; a regent of the American College of Dentists from 1936 to 1941; president of the American College of Dentists in 1942, and chairman of the Journalism Committee of the American College of Dentists from 1944 to 1946.

NO PRIZE AWARDED IN CHICAGO DENTAL SOCIETY ESSAY CONTEST

No award has been made in the Seventh Annual Essay Contest sponsored by the Chicago Dental Society, as none of the entries submitted was considered worthy of the prize by the judges.

Of the essays entered in the contest, some were a rehash of material submitted earlier, others offered conclusions unsupported by data and others were not sufficiently well prepared, according to an editorial in the *Fortnightly Review of the Chicago Dental Society.*

The editorial pointed out that younger dentists who are interested in research have only recently returned from military service and have had no opportunity to renew their studies.

A. S. MECCA NAMED ASSOCIATE DIRECTOR OF GUGGENHEIM CLINIC

Anthony S. Mecca has been appointed associate director of the Murry and Leonie Guggenheim Dental Clinic, New York, according to Daniel F. Tobin, newly appointed director of the clinic.

The former director, John Oppie McCall, retired recently.

AMERICAN RED CROSS SEEKS $60,000,000 GOAL FOR 1947

The American Red Cross will conduct its 1947 campaign to raise funds from March 1 to 31. The national goal for this year is $60,000,000.

George A. Coleman, chairman of the American Red Cross Committee of the American Dental Association, has issued the following statement in connection with the 1947 campaign: "The American Dental Association recognizes the objectives and great accomplishments of the American National Red Cross. We are certain that the members of the Association will give 100 per cent support to the needs of the American National Red Cross in the coming campaign for funds."

COLUMBIA UNIVERSITY PRINTS NEW DENTAL PERIODICAL

A new dental periodical, *Dental Abstracts,* an official publication of the Faculty of Medicine, School of Dental and Oral Surgery, Columbia University, appeared in February.

The periodical is designed to serve as a key to dental literature and dental progress. Ninety-four journals in the dental field, including foreign publications, will be abstracted regularly in the magazine. *Dental Abstracts* will appear five times a year.

SCIENCE ASSOCIATION HAS NEW PERMANENT HEADQUARTERS

The American Association for the Advancement of Science is now lodged in a permanent home for the first time in ninety-eight years. The association plans to replace the red brick mansion at 1515 Massachusetts Ave., Washington, D. C., with a modern headquarters at the same site. The association, which has 28,724 individual members and 195 affiliated and associated societies, is the largest group of its kind in the world.

BRITISH COUNCIL ADVISES SETTLING DENTAL DISPUTE

The Joint Advisory Dental Council, which suggested to dentists in Great Britain that they withdraw from dental benefit service last fall in protest against inadequate government fees established by the Ministry of National Insurance, has recommended that the profession resume benefit practice pending the negotiation of a higher fee scale.

The text of the statement of the Joint Advisory Dental Council follows:

The Joint Advisory Dental Council, in recommending the profession to resume dental benefit service forthwith, has done so believing that such action is in the best interests of the dentist and the insured person alike, and that the terms of the settlement represent a major concession by the government to the profession.

When, two months ago, negotiations regarding the dental benefit scale of fees broke down, the Joint Advisory Dental Council advised the profession to withdraw from dental benefit service. It did this for three reasons: First, that the Ministry of National Insurance had rejected a recommended scale of fees and substituted a lower one; secondly, that the only further concession offered was a possible increase resulting in negotiations following the report of the Spens Committee on dental remuneration and effective only from the date upon which negotiations were completed; and, thirdly, that the scale of fees which the Minister had adopted was imposed by him with adequate negotiation.

The Minister's statement on Tuesday in the House shows that the government is fully prepared to accept an adequate scale of fees and to regard payments under the scale imposed by the Minister as instalment payments only; that they are willing to negotiate what the fees should be as soon as the Spens Committee report is available, and that payments under any agreed scale will be made retroactive to the date of settlement.

In short, the government is ready to accept the profession's scale of fees, or even a higher one, providing the profession can satisfy an independent arbitrating body — the Spens Committee—that the claims of the profession are in fact justified.

The Joint Advisory Dental Council believes that this new policy of the government meets many of its original objections. It has no doubt of the justice of the claims of the profession. It is, therefore, satisfied that the findings of the Spens Committee will ensure that any scale subsequently negotiated will not be less favorable than the one previously rejected by the Minister. It is convinced that the basis of settlement will not in any way prejudice negotiations on the method and order of remuneration under a future National Health Service, and has, indeed, received specific assurances on this point.

N. Y. ACADEMY OF DENTISTRY OPPOSES MEDICAL PLAN BILL

Members of the New York Academy of Dentistry, in a recent mail poll conducted by the president, voted overwhelmingly against the Wagner-Murray-Dingell bill.

Of the 284 members who voted in the poll, 280 were opposed to enactment of the bill and four were in favor. The Academy's total membership at present consists of 235 active, 110 associate, seven nonresident and seven allied.

FEDERATION OF LABOR ASKS NATIONAL HEALTH INSURANCE

A resolution calling for the establishment of a national system of health insurance providing health services to all workers and members of their families was passed unanimously at the sixty-fifth annual convention of the American Federation of Labor, held recently in Chicago.

The resolution specifically held that: "Such a system should be augmented by grants-in-aid to the states out of general revenues of the federal government for: (1) the construction of health facilities, (2) training of medical personnel, (3) medical research, (4) expansion of public health services, and (5) continuing and extending the present program of maternal and child health services."

LEGISLATION

BILL TO CREATE HEALTH AGENCY INTRODUCED BY SENATOR TAFT

A bill to create a national health agency under the direction of a national health administrator appointed by the President was introduced into the Senate February 10 by Robert A. Taft, Ohio; H. Alexander Smith, New Jersey; Joseph H. Ball, Minnesota, and Forrest C. Donnell, Missouri.

The bill, S. 545, has been patterned after S. 2143, which was introduced into the Seventy-Ninth Congress by Senators Taft, Smith and Ball. Under the act, the administrator of the national health agency would be a physician.

Components of the agency would include the office of dental care services, to be administered by a dentist; the office of medical and hospital care services; the U. S. Public Health Service; the Office of Maternal and Child Health; the Office of Health Statistics; the Food and Drug Administration, and the office of the administrator.

The bill calls for the distribution of money for the dental care of school children through the states, with $8,000,000 proposed for the first year and larger amounts each successive year. State allotments would be made on a basis of population. The bill would create a national institute of dental research as a division of the National Institute of Health.

NEW DENTAL, HEALTH BILLS INTRODUCED INTO CONGRESS

Three bills relating to health and welfare have been introduced into the House of Representatives of the Eightieth Congress. Two are companion bills to similar legislation in the Senate.

Representative Oren Harris, Arkansas, has introduced H. R. 574, a companion to S. 176 in the Senate. S. 176 originally was introduced in 1945 by James E. Murray, Montana, and was numbered S. 190. The bills authorize the appropriation of $2,000,000 for the erection and equipment of a national institute of dental research and $730,000 annually for dental research.

The National Institute of Dental Research would be directed by the Surgeon General of the U. S. Public Health Service as part of the National Institute of Health, Bethesda, Md.

Another bill introduced by Representative Harris, H. R. 573, is a companion to S. 140 in the Senate. The bills would create a new Department of Health, Education and Security in the Cabinet under the administration of a new cabinet Secretary of Health, Education and Security.

Both bills would set up separate divisions for health, education and security within the department and call for the transfer to the three divisions of Freedmen's Hospital, the U. S. Public Health Service, the Food and Drug Administration, the Federal Board of Hospitalization, the U. S. Office of Education and the Committee on Economic Security.

The House bill also calls for the transference of St. Elizabeths Hospital and the Office of Vocational Rehabilitation. The Senate bill provides in addition for the transfer of the Children's Bureau.

Representative A. L. Miller, Nebraska, has introduced H. R. 605, a bill to establish a cabinet Department of National Health, to be headed by a Secretary of National Health.

The bill provides that the President, after the enactment of the legislation, will transfer to the Department of National Health all existing agencies and functions which he may determine necessary to carry out the purpose of centralizing all federal health activities.

REPORTS OF

COUNCILS AND COMMITTEES

COMMITTEE ON LEGISLATION

IMPROVEMENT IN THE ADMINISTRATIVE STATUS OF THE NAVY DENTAL CORPS

THE introduction of the Army dental bill to secure improvement in the administrative status of the Army Dental Corps recalls the fight to secure the passage of the Navy dental bill, S.715, in the Seventy-Ninth Congress. During the struggles to secure favorable action on the bill there were those who contended that the bill would never be effective in changing the status of the Navy Dental Corps. The opposition said that the expense of making administrative changes would be prohibitive, that the bill would completely disrupt effective organization and that the provisions of the bill would be impossible to carry out on ships and at stations.

However, the bill passed Congress in December 1945 and became Public Law 284. Immediately thereafter, under the stimulus of the administrative officers of the Dental Corps, preparations were made for changes in the status of the Navy Dental Corps within the Bureau of Medicine and Surgery when the law should become effective in June.

Since Public Law 284 has now been in operation for some time and since the same arguments used against the Navy dental bill will undoubtedly be advanced against the Army dental bill, the following letter from Rear Admiral Lyle, administrator of the Navy Dental Corps, will be of interest to members of the American Dental Association. The official bulletins of the Bureau of Medicine and Surgery also published herewith ordering the necessary changes in the status of the Dental Corps to comply with Public Law 284 indicate that the law is effective.—*Carl O. Flagstad, Chairman.*

January 8, 1947

Dr. Carl O. Flagstad, Chairman
Committee on Legislation
American Dental Association

Dear Doctor Flagstad:

Receipt is acknowledged of your letter, dated December 16, 1946, regarding the effect of Public Law 284, Seventy-Ninth Congress, on the Dental Corps of the Navy.

By virtue of this law, the Secretary of the Navy by means of ALNAV 343 on June 27, 1946, established a Dental Division in the Bureau of Medicine and Surgery, and directed that "where dental services are or shall be established on ships and shore stations, such services shall be under the senior dental officer who shall be responsible directly to the commanding officer thereof for all professional, technical, and administrative matters in connection therewith." In an all ships and stations letter the Secretary of the Navy on June 27, 1946 also directed that the Bureau of Medicine and Surgery be reorganized, effective as of June 28, 1946. This letter outlined the manner in which the reorganization was to be effected. The Chief of the Bureau of Medicine and Surgery, on August 20, 1946, announced the establishment of the Dental Division and the reorganization of the dental functions in that Bureau. Copies of the three directives, as published in BuMed News Letter, are enclosed herewith.

The outstanding improvements which have already been effected are the establishment of the following:

a. Office of Assistant Chief of Bureau for Dentistry, in the Bureau of Medicine and Surgery. The dental officer appointed to this duty has the rank of rear admiral.

b. Office of Chief of the Dental Division, Bureau of Medicine and Surgery. The dental officer appointed to this duty also has the rank of rear admiral.

c. The Dental Professional Branch, Dental Inspections Branch and Dental Personnel Branch in the Dental Division.

d. Dental departments at all naval activities, where dental officers are stationed, ashore, afloat and beyond the continental limits of the United States. The dental officers in charge of these dental departments are directly responsible to their respective commanding officers and have the same departmental status as all other heads of departments. Senior dental officers are directly responsible for all matters pertaining to the dental service which includes custody and control of dental equipment and supplies and administrative control of enlisted dental technicians.

Although considerable improvement has been made in the status of the Dental Corps of the Navy as a result of the passage of Public Law 284, it should be noted that the act does not, except in a broad way, specify how the reorganization of the Dental Division of the Medical Department of the Navy shall be accomplished. That authority is given to the Secretary of the Navy and through him to the Chief of the Bureau of Medicine and Surgery. The method and extent of the reorganization and changes in administration of the Dental Division of the Bureau of Medicine and Surgery and the dental departments throughout the naval service, therefore, depend on the manner in which the language of the bill is interpreted by the various bureaus and offices which advise the Secretary of the Navy and the Chief of the Bureau of Medicine and Surgery. The implementation of the law consequently depends on the completeness in which the details of the specific interpretations and directives are promulgated to the naval service. Excellent progress has been made but it will still be some time before the dental service of the Navy has been reorganized and reestablished in the manner which was intended but not directed in detail by Public Law 284.

I trust the information I have given you is what you desire. Please feel free to call on me for anything further which you may desire to know about the Dental Corps of the Navy.

With all good wishes, I remain

Sincerely yours,
A. G. Lyle
Rear Admiral (DC) USN
Assistant Chief for Dentistry

BuMed News Letter, Vol. 8, No. 2, ALNAV 343, June 27, 1946.

Subject: Dental Division of BuMed and Public Law 284.

Pursuant to Public Law 284 approved December 28, 1945, the following directive is effective as of June 28, 1946:

A dental division is hereby established in BuMed to plan and direct all matters relating directly to dentistry. Where dental services are or shall be established on ships and on shore stations, such services shall be under the senior dental officer who shall be responsible directly to the commanding officer thereof for all professional, technical and administrative matters in connection therewith. Administrative action taken pursuant to foregoing shall be such as not to interfere with proper functioning of battle organizations. Dental reports and other communications shall be forwarded to BuMed or other higher authority via the commanding officer. The care and treatment of all dental conditions shall be directly under the control of the senior dental officer who shall be responsible to the commanding officer. For medical assistance in unusual and emergency situations and for organization and training for battle, dental personnel and equipment shall be under the command and control of the medical officer when so assigned, by the commanding officer, or as provided in battle and emergency bills. Logistics shall be provided under established procedure until such time as further directives and instructions are issued. Senior medical officers of all ships and stations shall transfer to senior dental officers on NavSandA 127 dental equipment supplies and such medical supplies as may be necessary. Supplies and equipment other than that under cognizance BuMed required for the operation and maintenance of the dental department shall be issued to the senior dental officer by appropriate custody or issue voucher. Refer SecNav

serial 3369P21 of June 27, 1946 to be published in June 30 Navy Department Bulletin for amplification of foregoing. Changes in NavRegs, general orders, and bureau manuals and detailed directives and instructions required to implement will be promulgated soonest practicable.

John L. Sullivan,
Secretary of the Navy

BuMed News Letter, Vol. 8, No. 3, June 27, 1946.

To: All Ships and Stations, Bureaus, Boards, and Offices, Navy Department, Headquarters, U. S. Marine Corps.

Subject: Reorganization To Provide More Efficient Dental Care for the Personnel of the United States Navy.

1. Public Law 284, 79th Congress, 1st Session, approved December 28, 1945, requires the reorganization of the Bureau of Medicine and Surgery so as to provide for greater integrity of the dental service. It also requires that the Secretary of the Navy shall provide by regulations for establishing on ships and on shore stations dental services to be under the senior dental officer, who shall be responsible to the commanding officer of such ship or shore station for all professional, technical and administrative matters in connection therewith, the foregoing being subject to the qualification that it shall not be construed to impose any administrative requirements which would interfere with the proper functioning of battle organizations. Accordingly, the following reorganization shall become effective as of June 28, 1946.

2. A Dental Division is hereby established in the Bureau of Medicine and Surgery which shall study, plan and direct all matters coming within the cognizance of such division, and all matters relating to dentistry shall be referred to the Dental Division. The Dental Division shall (1) establish professional standards and policies for dental practice; (2) conduct inspections and surveys for maintenance of such standards; (3) initiate and recommend action pertaining to complements, advancement, training, assignment and transfer of dental personnel, and (4) serve as the advisory agency for the Bureau of Medicine and Surgery on all matters relating directly to dentistry.

3. Where dental services are or shall be established on ships and on shore stations, such services shall be under the senior dental officer, who shall be responsible directly to the commanding officer of such ship or shore station for all professional, technical and administrative matters in connection therewith. Administrative action taken pursuant to this paragraph shall be such as not to interfere with the proper functioning of battle organizations.

4. All dental reports and other communications pertaining to dentistry or dental personnel shall be forwarded to the Bureau of Medicine and Surgery or to other higher authority via the commanding officer.

5. The care and treatment of all dental conditions shall be directly under the control of the senior dental officer, who shall be responsible to the commanding officer. Medical officers shall refer dental conditions to dental officers when such are available. For medical assistance in unusual and emergency situations and for organization and training for battle, dental personnel and equipment shall be under the command and control of the medical officer when so assigned by the commanding officer or as provided in battle and emergency bills. The term "dental personnel" as used herein shall include all officers of the Dental Corps and such other officers and enlisted personnel as may be assigned to the dental department by the commanding officer or higher authority.

6. Dental supplies, equipment and services shall be procured under established procedure until such time as further directives and instructions are issued pursuant to paragraph 7 hereof. Senior medical officers of all ships and stations shall transfer to senior dental officers on NavSandA 127 dental equipment, dental supplies and such medical supplies as may be necessary. Supplies and equipment, other than that under the cognizance of the Bureau of Medicine and Surgery, required for the maintenance and operation of the dental department shall be issued to the senior dental officer by the appropriate custody or issue voucher. Commanding officers are directed to provide proper and adequate storage and safekeeping facilities for dental supplies, including drugs, narcotics and precious metals.

7. Changes in Navy Regulations, Navy Department general orders and bureau manuals, and detailed directives and instructions re-

quired to implement Public Law 284, 79th Congress, will be promulgated at the earliest possible time. Pending such promulgation, all members of the naval service affected by this directive shall employ their best efforts to provide that the changes required shall be so effected as to maintain efficiency and economy. It is considered that the changes necessitated by Public Law 284, 79th Congress, can be accomplished through the conscientious efforts of all concerned.

John L. Sullivan,
Secretary of the Navy

BuMed News Letter, Vol. 8, No. 6, August 20, 1946.

To: Assistant Chiefs of Bureau, Divisions, and Officers, BuMed.

Subject: Reorganization of Dental Functions and Establishment of a Dental Division, Bureau of Medicine and Surgery.

Refs: (a) BuMed Top Management Memo. A3-4/EN, June 7, 1946. (b) BuMed Memo. A3-4/EN, May 24, 1945, Reorganization of Dental Functions Under an Assistant for Dentistry.

General

1. The dental functions of the Bureau of Medicine and Surgery as outlined herein and reflected in the attached chart are approved and shall become effective immediately and all matters relating to dentistry, as hereinafter prescribed, shall be referred to the Dental Division.

2. An office of the Chief of Dental Division is hereby established under the policy control of the Assistant Chief of Bureau for Dentistry. An officer of the Dental Corps of the Navy will be detailed as the Chief of this Division.

3. The Dental Division shall (a) establish professional standards and policies for dental practice; (b) conduct inspections and surveys for maintenance, efficiency and economy of such standards; (c) initiate and recommend action pertaining to complements, appointments, advancements, training, assignment, and transfer of dental personnel, and (d) serve as the advisory agency for the Bureau of Medicine and Surgery on all matters relating directly to dentistry.

4. In order to expedite these functions, there is established under the Assistant Chief of Bureau for Dentistry, an Office of the Chief of Dental Division consisting of (a) a Dental Professional Branch, (b) a Dental Inspection Branch and (c) a Dental Personnel Branch.

Assistant Chief of Bureau for Dentistry

5. The Assistant Chief of Bureau for Dentistry shall be responsible for the functions outlined in paragraph 3(e) and 5, reference (a).

Chief of Dental Division

6. The Chief of Dental Division shall be responsible for the performance of all dental functions outlined in paragraph 3 of this directive, but shall adopt no major policies, methods or procedures without the approval of the Assistant Chief of Bureau for Dentistry.

Dental Professional Branch

7. The Dental Professional Branch shall perform the functions listed in items (a) and (d) as relates to professional standards and policies, and shall be responsible for the development, coordination and evaluation of training programs for dental personnel listed in item (c) of paragraph 3 of this directive. This branch shall consist of (a) the Dental Standards Section and (b) the Dental Training Section.

8. The Dental Standards Section shall perform the functions of the Dental Professional Branch as they relate to professional standards and policies for dental practice.

9. The Dental Training Section shall perform the functions of the Dental Professional Branch as they relate to the development, coordination and evaluation of training programs for dental personnel.

Dental Inspections Branch

10. The Dental Inspections Branch shall perform the functions listed in item (b), paragraph 3 of this directive. This branch shall function under the General Inspector for Dentistry, who is directly under the Chief of the Dental Division.

Dental Personnel Branch

11. The Dental Personnel Branch shall perform the functions listed in item (c) except for the development, coordination and evaluation of training programs, and item (d) as relates to officer and enlisted personnel mat-

ters, of paragraph 3 of this directive. This Branch shall consist of (a) a Dental Appointment and Advancement Section, (b) a Dental Assignment and Transfer Section and (c) an Enlisted Personnel Section.

12. The Dental Appointment and Advancement Section shall perform the functions of the Dental Personnel Branch as they relate to professional qualifications of dental officer personnel.

13. The Dental Assignment and Transfer Section shall perform the functions of the Dental Personnel Branch as they relate to complements, assignments, transfers and releases of dental officer personnel.

14. The Enlisted Personnel Section shall perform the functions of the Dental Personnel Branch as they relate to enlisted personnel.

15. Reference (b) is hereby superseded and cancelled.

Ross T. McIntire,
Vice Admiral (MC) USN
Chief of Bureau

DENTAL BILLS IN STATE LEGISLATURES

Annual Registration.—Maryland H.68 would require an annual registration of dentists.

Board of Dental Examiners.—Connecticut H.69 would consolidate the administrative work of all professional and vocational licensing boards.

Corporations.—Massachusetts H.707 would prohibit the practice of dentistry by corporations.

Education.—Colorado H.579, H.598 and S.231 (separate bills) would create the University of Colorado dental school and would provide for its maintenance and government. H.734 would levy an annual tax and make an appropriation therefrom for the use, benefit, maintenance and support of the dental school of the University of Colorado. S.336 would make an appropriation for the University of Colorado dental school.

New York A.732 and S.657 (companion bills) would provide for the establishment of a state university with a college of arts and sciences and schools of dentistry, medicine, law and engineering and such other colleges and professional schools as may be established by law, subject to approval by voters at the general election in 1947. A.733 and S.656 (companion bills) would authorize the creation of a state debt of $50,000,000 for a state university with a school of arts and sciences and schools of dentistry, medicine, law and engineering and such other colleges and professional schools as may be established by law; would require that qualified residents shall be admitted without charge and without discrimination because of race, color, creed or national origin, and would require that the bill be submitted to the voters at the general election in 1947.

New York A.7 and S.7 (companion bills) would create in the education department a commission against discrimination in education with three members to be appointed by the governor, to formulate plans to prevent and eliminate practices of discrimination in education because of race, religion, color, national origin or ancestry; would define unfair educational practices, and would exempt sectarian institutions. A.45 and S.112 (companion bills) would appropriate $150,000 for the expenses of the proposed

state commission against discrimination in education because of race, religion, color, national origin or ancestry.

New York A.415 and S.110 (companion bills) would permit any person who because of race, color or religion is denied the use of facilities of a tax exempt educational corporation or association which claims to be nonsectarian to petition the attorney general to bring an action in the supreme court to have such tax exempt property placed on the taxable property rolls. A.647 and S.587 (companion bills) would prohibit an inquiry by a nonsectarian organization as to the race, color or religion of an applicant for admission.

Free Choice.—New York S.561 would permit an injured employee in a Workmen's Compensation case, where dental care is required, to select any dentist authorized by the rules of the commissioner on recommendation of the State Board of Dental Examiners and would require that the reasonableness and necessity for dental care be determined by the Industrial Board.

Hygienists.—Arizona S.10 would provide for the licensing and registration of dental hygienists by the Arizona State Dental Board.

Maine S.102 would authorize a dental hygienist to operate an x-ray machine and to make applications of medicine to the teeth and gums.

Laboratories and Technicians. —Massachusetts S.1421 would authorize the registration by the Board of Dental Examiners of dental mechanics, dental laboratories and the employees of such laboratories.

Reciprocity.—Michigan H.34 would permit veterans to practice dentistry in that state without examination if they have been duly admitted to practice in other states.

Trade Names.—Massachusetts H.1422 would prohibit the use of a trade name to designate a dental office.—*George H. Fox, Secretary.*

●

Changing Character of Commercial Penicillin.—Penicillin as commercially distributed is not a single substance but a mixture of several. At least four different penicillin species which differ chemically in the side chains attached to the basic nuclear structure have been identified. These are known in the United States as penicillins G, X, F and K.

The relative content of these several penicillins in commercial penicillin may vary from time to time throughout the industry. In recent months some commercial penicillins have contained a substantial proportion of penicillin K.

The several penicillins vary in their in vitro and in vivo activity against a variety of bacteria.

Penicillin K is relatively inefficacious against the several infections against which it has been experimentally studied. Its inefficacy is apparently due to the fact that, unlike penicillins G, X and F, it is rapidly destroyed in the body.

Commercial penicillin has also undergone a change in the direction of increasing purity (in units per milligram) with a consequent decrease in "impurities" which may possibly possess therapeutic activity.

The changing character of commercial penicillin is reflected in the fact that the results of penicillin treatment of early syphilis have been less satisfactory since May 1944 than prior to that date. . . .

The factors responsible for the apparent decrease in efficacy of commercial penicillin are under intensive cooperative study in laboratories and clinics working under the sponsorship of the National Institute of Health and by industry, and practical steps to meet the difficulty are in progress by industrial producers.—*Committee on Medical Research, the United States Public Health Service and the Food and Drug Administration, "The Changing Character of Commercial Penicillin, with Suggestions as to the Use of Penicillin in Syphilis." J.A.M.A. 131:271 (May 25) 1946.*

BOOK REVIEWS

A History of Medicine. By Douglas Guthrie, M.D., F.R.C.S.Ed., F.R.S.E. With an introduction by Samuel C. Harvey, M.D., F.A.C.S. 448 pages, with 72 plates. Cloth. Index. Price $6.00. Philadelphia: J. B. Lippincott Company, 1946.

Any attempt to compress the history of medicine, from ancient times to the present day, into one volume is often met with scholarly derision. This author, with certain stipulations, may be said to have succeeded splendidly in his effort. The result is a very readable, consecutive account of the background of medical practice. The style is narrative rather than academic, and this should meet with the approval of the reader who is seeking a panoramic, rather than a microscopic, view of the history of medicine.

Major attention is given to the developments in medicine up to the end of the nineteenth century. There is little effort at discussing the history of modern medicine, which is, perhaps, wisely left to another volume. The chapters on the genesis of medicine and on medieval medicine are well handled and documented. The sections on eighteenth and nineteenth century medicine are especially vivid and reveal the highly effective style of the author.

Dentistry is given very little attention, either as a branch of medicine and surgery in early days, or as a specialty of medicine in later ones. Reference to dentistry as an independent profession is casual, and the author cites only two works in the appendix: Sudhoff's *Geschichte der Zahnheilkunde* and Lufkin's *A History of Dentistry*. The passage dealing with the discovery and demonstration of anesthesia reproduces some of the viewpoints that have not been sustained by modern historical study.

All of the illustrations have been reproduced in monochrome, and it is a delight to compare these to the well-worn and faded engravings that feature so many other historical accounts of medicine and dentistry.

Guthrie's book is not intended to supplant the more extended accounts of medical history such as those by Garrison and Castiglione, but it should find a large audience among less demanding readers. It is recommended for all of those who wish to spend a few hours in the company of physicians and surgeons of a storied past.

Cirugia Bucal. By Guillermo A. Ries Centeno, associate professor of pathology and clinical dentistry, Buenos Aires, Argentina. 908 pages. 1,102 illustrations. Buenos Aires: El Ateneo, 1945.

This book is presented in two volumes. Volume I deals with surgical anatomy of the mouth, surgical technic and exodontia. Volume II covers apicoectomy, inflammatory processes of the maxilla and mandible, surgery as it is related to prosthetics and orthodontics, surgical treatment of abnormal conditions in which there exist communications between the mouth and the maxillary sinus or between the mouth and the nasal cavities, and tumors of the maxilla and mandible.

Each section is followed by an extensive bibliography referring to literature in English, Spanish, French, Portuguese, German and Italian.

The book is well organized and contains an unusual number of excellent illustrations, many of which are original. The sections which describe the various technical procedures step by step are particularly well illustrated. The two volumes contain 1,102 figures, and many of these include several cuts. The author describes in detail many of the procedures that are generally accepted in oral surgery.

The presentation of any subject as broad as this would naturally contain parts which might be controversial in nature. However, as a whole the treatment of the subjects covered in this book is based on sound principles, and the author's aims have been accomplished in a commendable way. This book should prove valuable to the dental profession and is an important contribution to Spanish dental literature.—*W. R. Schram and C. E. Pomés.*

CURRENT LITERATURE

Journal of Dental Research
October 1946

Titles marked with an asterisk (*) are reviewed below.

The Editor's Viewpoint.....297
***Experimental Study of Pulp Changes Produced in the Decompression Chamber.** B. Orban, B. Ritchey and H. A. Zander, Chicago.—299.
***Comparative Studies of the Feeding of Fluorides as They Occur in Purified Bone Meal Powder, Defluorinated Phosphate and Sodium Fluoride, in Dogs.** D. A. Greenwood, J. R. Blayney, O. K. Skinsnes and P. C. Hodges, Chicago.—311.
The Effect of Sodium Fluoride on the Teeth and Blood Calcium and Inorganic Phosphorus Levels of Rachitic Rats. J. T. Irving and M. W. P. Neinaber, Capetown, South Africa.—327.
***The Effect of Cadmium on the Production of Caries in the Rat.** Henry M. Leicester, San Francisco.—337.
***Dental Caries in the Syrian Hamster. I. The Character and Distribution of Lesions.** Paul H. Keyes, Rochester, N. Y.—341.
Serial Sections of Undecalcified Enamel. M. T. Jansen, Utrecht, Holland.—355.
A Technic for Observing Minute Changes on Tooth Surfaces. B. F. Gurney and G. W. Rapp, Chicago.—367.
Bands of Shreger. J. Staz, University of Witwatersrand, South Africa.—373.
***Odontoblasts and Dentinogenesis.** G. Bevelander and P. L. Johnson, New York.—381.
***Further Observations on the Vital Staining of Dentin and Enamel.** C. F. Bodecker and W. Lefkowitz, New York.—387.
***A Demonstrable Line on Extracted Teeth Indicating the Location of the Outer Border of the Epithelial Attachment.** Charles C. Bass, New Orleans.—401.
International Association for Dental Research. Proceedings of the New York Section, June 5, 1946. S. C. Miller (Editor, N. Y. Section).—417.

Experimental Study of Pulp Changes Produced in the Decompression Chamber. B. Orban, B. Ritchey and H. A. Zander.

Experiments on dogs were conducted to ascertain the reaction of the dental pulp to decompression and anoxia. Different filling materials were used to establish possible irritation by these materials and their role in decompression. Thirteen dogs were used, and twelve teeth of each were sectioned for microscopic examination. There was no significant difference in the response of the pulps of dogs to the commonly used filling materials. In no case was there more than a mild local tissue reaction. Croton oil applied to cavities produced an acute inflammation.

Decompression to simulate an altitude of 38,000 feet produced a hyperemia and occasional hemorrhages; these changes apparently had largely subsided thirty minutes after recompression. The findings were the same in the control teeth and in those subjected to common dental operative procedures; the reactions were increased in intensity in the specimens treated with croton oil.

Anoxia, leading to asphyxiation, produced severe hyperemia and extensive capillary hemorrhages. The effects of the anoxia were the same whether anoxia took place at ground level or at altitude.

Comparative Studies of the Feeding of Fluorides as They Occur in Purified Bone Meal Powder, Defluorinated Phosphate and Sodium Fluoride, in Dogs. D. A. Greenwood, J. R. Blayney, O. K. Skinsnes and P. C. Hodges.

Studies on twenty-one litters of dogs revealed that there was no significant alteration in serum calcium and phosphorus, hemoglobin, blood coagulation time and growth in dogs fed fluorine as it occurs in purified bone meal powder, defluorinated phosphate and sodium fluoride at a level of 5 mgm. per kilogram of body weight daily, up to a period of one year under the experimental conditions studied. Puppies fed 5 mgm. of fluorine as sodium fluoride per kilogram of body weight daily during the period of calcification of their teeth developed dental fluorosis and stored excessive fluorine in their bones. Other puppies fed the same level of fluorine as it occurs in purified bone meal powder and defluorinated phosphate did not develop dental fluorosis or store excessive fluorine in their bones. Bone development appeared normal in all groups as revealed by breaking-strength tests, roentgenograms and histologic studies. The teeth of twenty dogs fed 5 mgm. of fluorine as bone

meal powder per kilogram of body weight and of eleven dogs fed defluorinated phosphate at the same level of fluorine intake were superior to the teeth of dogs fed a similar level of fluorine as sodium fluoride or the control ration supplemented with the same level of calcium and phosphorus as found in bone meal powder or defluorinated phosphate.

The Effect of Cadmium on the Production of Caries in the Rat. Henry M. Leicester.

Administration of 0.002 per cent cadmium chloride in the drinking water of rats did not affect the production of caries by a coarse corn diet, but when the concentration was raised to 0.004 per cent the caries index showed a much greater range than in the controls, indicating a more rapid progress of the lesion. When 0.004 per cent cadmium chloride was administered during the calcification period only, it was not taken up by the molars, but when administration was continued for 100 days, the molars contained an average of 0.003 per cent cadmium and showed a variable caries index. This finding may be the result of a localized stimulation of phosphatase activity by small concentrations of cadmium.

Dental Caries in the Syrian Hamster. I. The Character and Distribution of Lesions. Paul H. Keyes.

One hundred and twenty-six hamsters were placed on a diet of whole wheat flour, corn starch, sugar, powdered milk and alfalfa. Carious lesions were detectable microscopically in the teeth of animals on the diet ten days. Gross lesions were frequent and extensive after thirty days. Subgingival surfaces of the teeth were more susceptible to caries activity than supragingival areas. Lesions were associated with the presence of plaque-like material, with yellow-brown pigmentary changes in the enamel cuticle and enamel, with changes in enamel translucency and with the presence of gram-positive spherical microorganisms. The fundamental process of dental caries in hamsters appears to be similar to that described in human beings. Such differences as there are appear to be more of a quantitative than of a qualitative nature.

Odontoblasts and Dentinogenesis. G. Bevelander and P. L. Johnson.

During the differentiation of the odontoblast, alkaline phosphatase comes to be localized within the nucleus, the cytoplasm and the dentinal fibril just before and during the early calcification of dentin. In older dentin, this same situation holds true and, in addition, Tomes' dentinal fibril is also strongly phosphatase positive. On the basis of the well-known function of phosphatase in connection with normal calcification, we can now state with a fair degree of certainty that the function of the odontoblast and Tomes' fibril is to a great extent biochemical—to produce and mediate phosphatase transfer, which in turn leads to the splitting of phosphate in the very region in which it is deposited.

Further Observations on the Vital Staining of Dentin and Enamel. C. F. Bodecker and W. Lefkowitz.

The purpose of the investigation was to define fluid interchange between the pulp, dentin and enamel which might support slight metabolic processes. The authors report on a total of 224 vitally stained teeth of man, dog, monkey, sheep, calf and cat, using not only silver nitrate but also water-soluble eosin, congo red, borax carmine, methylene blue, argyrol and potassium permanganate. The dry dyes were placed in cavities drilled in sound teeth of various ages and left in the mouths from six minutes to four weeks. Prepared sections showed that the dyes were dissolved by a tissue fluid which has been named dental lymph and were distributed through dentin and enamel, establishing permeable channels in these tissues. In teeth from which the pulps had been removed recently, the dye no longer remained in the organized channels but diffused across them; the dentin and enamel showed a far greater degree of permeability than in vital teeth. This observation, according to physiologists, shows that death had occurred in the dental tissues as a result of the removal of the pulp; hence a low degree of metabolism dependent on the dental pulp is suggested in dentin and enamel, active for some time after tooth eruption.

The fact that the dye, which had penetrated to the dental pulp, was redistributed by this organ suggests that the dental lymph originates from the pulp. Argyrol and potassium permanganate particles are transported in two directions, efferently and afferently in

uninjured tubules, a finding which may explain one phase of dentin metabolism.

A Demonstrable Line on Extracted Teeth Indicating the Location of the Outer Border of the Epithelial Attachment. Charles C. Bass.

On a tooth which has attained the occlusal level, the epithelial attachment consists of a band of epithelial cell tissue attached to the enamel on the tooth side and organically united with the oral epithelium on the other side. The width varies from about one-third to one-half the length of the anatomic crown. Normally the inner border extends to, but never beyond, the cemento-enamel junction. The outer border is located in the gingival crevice or sulcus.

As a result of disease (early stage periodontoclasia), the epithelial attachment on the enamel becomes narrower as the outer border recedes. As the attachment moves still farther toward the apex, it crosses over the cemento-enamel junction line and thereafter rests upon the cementum. At some stage during the process, the attachment rests partly upon the enamel and partly upon the cementum.

The epithelial attachment on the enamel rests upon a cuticle (secondary enamel cuticle) which in turn rests upon, and is attached to, the primary enamel cuticle. After the location of the attachment has moved onto the cementum, it then rests upon a cuticular structure (dental cuticle) by which it is attached to the cementum. This cuticular structure upon which the epithelial attachment rests, whether on the enamel or cementum, and to which it is organically attached, is produced or laid down by the epithelial attachment. Therefore the term "epithelial-attachment cuticle" is proposed as a name for it.

The outer border of the epithelial-attachment cuticle disintegrates as the outer border of the attachment recedes. At all times there is a strip or zone of this disintegrating cuticle adjacent to the outer border of the attachment. It stains a darker color than the other part and constitutes the demonstrable line.

The extracted teeth are preserved in 2.5 per cent formalin. The specimen is brushed with a soft toothbrush, stained in 0.5 per cent crystal violet in water one to five minutes and rinsed and brushed again. When the specimen is examined under a microscope, the purple stained line is easily recognized extending partly or entirely around the tooth. The fact that this line consists of a zone of disintegrating epithelial-attachment cuticle is easily demonstrated by releasing the cuticle from the enamel by immersing the specimen in 10 per cent hydrochloric acid for two to five minutes, removing a suitable piece, restaining and examining under higher magnifications of the microscope.

"Zone of disintegrating epithelial-attachment cuticle" or "zdeac" is proposed as a name for this line.

Bifid Nose Associated with Midline Cleft of the Upper Lip. D. F. Weaver and D. H. Bellinger. Arch. Otolaryng. 44:480, October 1946.

A review of the literature revealed only thirteen similar cases. A white female baby was born at full term, normal in all respects except for a bifid nose associated with a midline cleft of the upper lip. One month after birth the lip was repaired, and two months after that the nose was repaired. A third operation one year later removed a congenital pit in the skin at the junction of the upper surface of the alar cartilages. At present the eyes are too far apart, but it is felt that the final result will be better if nothing further is done until development is completed.—*E. R. Costich.*

Demonstration of Phosphatase in Decalcified Bone. I. J. Lorch. Nature 158:269, August 24, 1946.

Since the decalcifying fluids commonly used in histology destroy alkaline phosphatase, it previously has been possible to demonstrate the enzyme only in undecalcified bone. The present method permits bones of adult rats and mice to be decalcified without adverse effects on the enzyme. It is based on the fact that alkaline phosphatase is reversibly inactivated by acid solutions having a pH greater than 4.5 and can be reactivated afterwards by alkaline solutions. Inactivation is retarded by the addition of Zn^{++} to the acid medium, and reactivation is aided by glycine. The technic is described briefly. Phosphatase distribution thus found agrees essentially with that described by other workers. The ground substance of bony trabeculae or compact bone contains no phosphatase. Superficially placed osteocytes, with their processes, and Sharpey's fibers stand out black against the colorless matrix.—*J. E. Gilda.*

DEATHS

Adams, Floyd E., Evanston, Ill.; died December 4; aged 47.

Applegate, Oliver S., Hicksville, Ohio; Chicago College of Dental Surgery, Dental Department of Loyola University, 1897; died December 30; aged 78.

Baker, J. H., Waterloo, S. C.; died November 26.

Barrett, Charles E., Hartford, Conn.; died December 14.

Bond, Stephen H., Chickasha, Okla.; School of Dentistry, Vanderbilt University, 1901; died December 6.

Bowen, Joseph R., Los Angeles; died December 12; aged 69.

Bray, Charles B., Birmingham, Ala.; School of Dentistry, University of Louisville, 1910; died December 26; aged 65.

Bridgland, Frederick T., Philadelphia; School of Dentistry, Temple University, 1897; died December 8; aged 76.

Brown, Fred, Kewanee, Ill., Dental School, Northwestern University, 1908; died January 10; aged 64.

Brunet, Frederick R., Philadelphia; Pennsylvania College of Dental Surgery, 1899; died December 15; aged 85.

Bunch, John R., Jacksonville, Ill.; School of Dentistry, St. Louis University, 1907; died December 25; aged 65.

Burchfield, Charles E., St. Joseph, Mich.; College of Dental Surgery, University of Michigan, 1892; died December 20; aged 73.

Bushnell, Charles W., Chicago; Dental School, Northwestern University, 1902; died November 26; aged 74.

Bynoe, Arnold J., Cambridge, Mass.; died December 31; aged 72.

Calhoun, Joseph F., Eldon, Iowa; College of Dentistry, University of Iowa, 1898; died December 18; aged 71.

Calkins, William G., Pomona, Calif.; Chicago College of Dental Surgery, Dental Department of Loyola University, 1918; died November 4; aged 54.

Capon, William A., Philadelphia; Philadelphia Dental College, 1890; died January 9; aged 86.

Casey, Edward, Milwaukee; School of Dentistry, Marquette University, 1901; died December 6; aged 68.

Casey, John A., Wilmington, Del.; School of Dentistry and the Baltimore College of Dental Surgery, University of Maryland, 1924; died November 24; aged 45.

Cherault, Leonard D., New Orleans; College of Medicine, School of Dentistry, Tulane University of Louisiana, 1907; died January 2; aged 63.

Clancy, William J., Milford, Mass.; Dental School, Harvard University, 1915; died December 13; aged 58.

Clark, John E., Savanna, Ill.; Chicago College of Dental Surgery, Dental Department of Loyola University, 1897; died November 24; aged 78.

Cleaver, Charles W., St. Petersburg, Fla.; Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, 1896; died November 7; aged 73.

Collins, Orlando G., Decatur, Ill.; Chicago College of Dental Surgery, Dental Department of Loyola University, 1892; died December 9; aged 76.

Collins, William H. T., Philadelphia; Pennsylvania College of Dental Surgery, 1906; died January 4; aged 61.

Cook, William A., Scarsdale, N.Y.; Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, 1921; died January 19; aged 50.

Cressler, Olin H., North Platte, Nebr.; Omaha Dental College, 1903; died December 10; aged 70.

Crocker, Frank M., Perry, N.Y.; School of Dentistry, University of Buffalo, 1901; died November 20; aged 68.

Dalton, Timothy F., Holyoke, Mass.; Baltimore Medical College, 1902; died December 15.

Dellinger, L. E., Greenville, S. C.; died December 31; aged 59.

Denbo, Edward S., Orleans, Ind.; College of Dentistry, State University of Iowa, 1892; died December 9; aged 77.

Dickey, George H., Great Neck, N.Y.; New York College of Dentistry, 1881; died January 2; aged 87.

Ditmarsen, John, South St. Paul, Minn.; College of Dentistry, University of Minnesota, 1905; died January 4; aged 71.

Dorman, Raymond A., Corning, N.Y.; died December 4; aged 66.

Dormon, William B., Camden, Ark.; died December 1.

Drake, Fred E., Portsmouth, N.H.; died November 26.

Dressel, Henry, Chicago; died January 10; aged 79.

Duffield, Joseph E., Philadelphia; School of Dentistry, Temple University, 1889; died December 22.

Dunlop, John A., Seattle; Kansas City College of Dental Surgery, 1898; died December 14; aged 74.

Eachus, Howard T., St. Paul; Pennsylvania College of Dental Surgery, 1887; died December 14; aged 86.

Edson, Calvin R., Cleveland; School of Dentistry, Western Reserve University, 1898; died November 7; aged 73.

Ender, Lewis W., La Crosse, Wis.; School of Dentistry, Marquette University, 1923; died December 20; aged 53.

Epting, Clyde K., McCormick, S.C.; died November 16; aged 53.

Ernsmere, John B., Buffalo; died January 9; aged 87.

Ervin, Edward G., Kansas City, Mo.; Western Dental College, 1907; died January 7; aged 71.

Feagan, J. H., Valdosta, Ga.; died November 22; aged 83.

Feldman, Charles, South Bend, Ind.; School of Dentistry, Indiana University, 1903; died December 14; aged 67.

Ferguson, Robert, Philadelphia; School of Dentistry, University of Pittsburgh, 1908; died November 25.

Fisher, Walter G., Chicago; died January 8; aged 55.

Fodness, Claude A., Heron Lake, Minn.; Chicago College of Dental Surgery, Dental Department of Loyola University, 1919; died December 25; aged 50.

Frazier, Theodoric T., Durham, N.C.; Baltimore College of Dental Surgery, 1881; died December 8; aged 90.

Frink, Joy L., Evanston, Ill.; died December 9; aged 80.

Fulkerson, Frederick M., Centerview, Mo.; School of Dentistry, Temple University, 1889; died December 25; aged 79.

Funkey, Henry, Detroit; College of Dental Surgery, University of Michigan, 1919; died December 13; aged 55.

Gatchell, Roswell L., Atlanta, Ga.; died January 5; aged 55.

Gebhardt, R. C., Black River Falls, Wis.; Chicago College of Dental Surgery, Dental Department of Loyola University, 1894; died November 17; aged 79.

Gerber, Arthur J., Saginaw, Mich.; Dental School, Northwestern University, 1933; died November 21; aged 37.

Gilpin, Alfred W. L., Detroit; died December 27; aged 65.

Goomrigian, Leon H., Summit, N.J.; School of Dentistry and the Baltimore College of Dental Surgery, University of Maryland, 1923; died December 3; aged 45.

Graham, Ernest, Gallipolis, Ohio; died December 20; aged 65.

Grant, Henry L., Louisville, Ky.; College of Dental Surgery, University of Louisville, 1914; died December 24.

Greeson, Harlan B., Philadelphia; School of Dentistry, University of Pennsylvania, 1919; died January 4; aged 54.

Grillo, Angelo S., Gary, Ind.; died in December.

Hall, Robert G., Franklin, Pa.; Pennsylvania College of Dental Surgery, 1903; died December 20; aged 66.

Hanavan, H. M., Pendleton, Ore.; School of Dentistry, North Pacific College of Oregon, 1919; died November 30; aged 53.

Hancock, Herbert H., La Crosse, Wis.; Dental School, Northwestern University, 1902; died November 21; aged 67.

Harlan, Ralfe M., Babylon, N.Y.; School of Dentistry, University of Buffalo, 1896; died November 15; aged 78.

Harris, Louis S., Newark, N.J.; died December 6; aged 62.

Harrison, Henry H., New York; Ohio College of Dental Surgery, Dental Department of the University of Cincinnati, 1887; died December 29; aged 61.

Harwood, Ernest E., Chicago; Chicago College of Dental Surgery, Dental Department of Loyola University, 1914; died November 21; aged 62.

Hatfield, Grant O., Wichita, Kan.; died November 24; aged 83.

Hill, R. C., Plattsburg, Mo.; Kansas City-Western Dental College, 1923; died November 4; aged 47.

Hollister, Alton H., Circleville, N.Y.; School of Dentistry, University of Buffalo, 1906; died November 5.

Hood, Elizabeth Y., Jersey City, N.J.; Pennsylvania College of Dental Surgery, 1899; died December 6; aged 64.

Horst, William G., Hagerstown, Md.; School of Dentistry and the Baltimore College of Dental Surgery, University of Maryland, 1919; died November 8; aged 49.

Hull, Robert C., Great Falls, Mont.; Dental School, Northwestern University, 1911; died December 19; aged 60.

Ipe, Murray, Battle Creek, Mich.; School of Dentistry, St. Louis University, 1918; died January 10; aged 52.

Jensen, Christian, Mt. Gilead, Ohio; Baltimore College of Dental Surgery, 1904; died November 9; aged 64.

Johnston, J. David, Chicago; Chicago College of Dental Surgery, Dental Department of Loyola University, 1916; died November 6; aged 54.

Katz, Lester E., New York; died December 10; aged 23.

Kell, Fred G., South Boston, Va.; died November 6; aged 69.

Kinkead, Charles J., Wilmington, Del.; School of Dentistry, Temple University, 1887; died November 20; aged 82.

Knighton, James B., Minden, La.; Atlanta Dental College, 1905; died November 12; aged 75.

Kruse, Claude R., Auburn, Calif.; A School of Dentistry, College of Physicians and Surgeons of San Francisco, 1908; died November 5; aged 59.

Ladson, Charles J., Washington, D.C.; died November 21; aged 85.

Lake, Arthur J., Olympia, Wash.; School of Dentistry, North Pacific College of Oregon, 1919; died December 28; aged 48.

Landry, F. A., Baton Rouge, La.; College of Medicine, School of Dentistry, Tulane University of Louisiana, 1908; died January 8; aged 55.

Langfitt, Silas B., Parkersburg, W. Va.; Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, 1897; died November 26; aged 75.

Lawing, Ernest O., Long Beach, Calif.; died November 5.

Lee, E. Stanley, Buffalo; School of Dentistry, University of Buffalo, 1925; died December 19; aged 46.

Livingood, A. M., Stillwater, Okla.; Kansas City-Western Dental College, 1924; died in January; aged 57.

Lovelace, G. R., Waycross, Ga.; Southern Dental College, 1892; died December 25; aged 78.

Lubitz, Samuel, New York; New York College of Dentistry, 1914; died December 15; aged 54.

Lunger, T. C., Scranton, Pa.; died in November.

McCraith, Thomas E., Utica, N.Y.; died December 3.

McCullough, Fred H., New Albany, Ind.; School of Dentistry, University of Louisville, 1913; died December 30; aged 58.

McCullough, William I., Indianapolis; School of Dentistry, Indiana University, 1912; died October 22; aged 55.

McElroy, Ruth C., Fresno, Calif.; died October 7; aged 50.

McGrath, Vincent P., New Haven, Conn.; died October 7; aged 54.

McIntosh, Lee, Oklahoma City; Southern Dental College, 1900; died December 4; aged 76.

McKay, James H., Glendale, Calif.; died September 26; aged 79.

McKelvey, Matthew, Kansas City, Mo.; Kansas City Dental College, 1915; died September 29; aged 55.

McLaughlin, Charles P., Cincinnati, Ohio; Ohio College of Dental Surgery, Dental Department of the University of Cincinnati, 1895; died December 11; aged 60.

Mailer, Harry O., Kansas City, Kan.; Dental School, Northwestern University, 1905; died January 3; aged 63.

Manuel, Rider S., San Francisco; College of Physicians and Surgeons of San Francisco, 1921; died October 30; aged 48.

Marback, George, Terre Haute, Ind.; School of Dentistry, Indiana University, 1887; died December 16; aged 82.

Marcellus, Mott V., Manasquan, N.J.; Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, 1907; died November 10; aged 62.

Margetts, Edward R., Milwaukee; School of Dentistry, Marquette University, 1922; died November 14; aged 46.

Martin, Samuel A., Muncie, Ind.; School of Dentistry, Indiana University, 1899; died November 12; aged 71.

Mausteller, William B., Harrisburg, Pa.; Thomas W. Evans Museum and Dental Institute School of Dentistry, University of Pennsylvania, 1902; died October 17; aged 74.

Mayo, Oscar K., Baton Rouge, La., died November 21; aged 45.

Miles, C. N., Bellefontaine, Ohio; Ohio College of Dental Surgery, Dental Department of the University of Cincinnati, 1900; died November 19; aged 69.

Miller, Charles R., Graceville, Fla.; died November 24; aged 43.

Miller, John C., Fort Wayne, Ind.; died October 23; aged 33.

Milliken, L. C., Green Lake, Wis.; Chicago College of Dental Surgery, Dental Department of Loyola University, 1902; died November 20; aged 67.

Mills, Alson P., New Vineyard, Maine; died November 6; aged 65.

Moberg, Elna M., New York; died December 4; aged 60.

Moore, Joseph A., Memphis, Tenn.; School of Dentistry, Vanderbilt University, 1899; died November 11; aged 78.

Mueller, Paul W., Madison, Wis.; School of Dentistry, Marquette, University, 1918; died November 13; aged 50.

Mulcrone, William R., Dearborn, Mich.; School of Dentistry, St. Louis University, 1913; died November 12; aged 60.

Murray, Thomas A., Manchester, N.H.; Tufts College Dental School, 1924; died December 24; aged 52.

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ANNOUNCEMENTS

MEETINGS OF STATE SOCIETIES

State	Date	Place	Secretary	Address
Alabama	April 8–10	Birmingham	G. W. Matthews	1922 Tenth Ave., S., Birmingham 5
Arizona	May 1–3	Tucson	B. K. Litt	68 E. Congress, Tucson
Arkansas	May 19–21	Little Rock	I. M. Sternberg	Merchants Bank Bldg., Ft. Smith
California	April 28–30	San Francisco	L. E. Linehan	450 Sutter St., San Francisco
S. California	Sept. 15–17	Los Angeles	R. L. Borland	903 Crenshaw Blvd., Los Angeles 6
Colorado	May 25–28	Colorado Springs	R. A. Downs	724 Republic Bldg., Denver 2
Connecticut			E. S. Arnold	37 Linnard Rd., W. Hartford
Delaware			J. Krygier	309 S. State St., Dover
D. of Columbia	June 10]	Washington	K. H. Wood	202-1835 Eye St., N. W., Washington
Florida			A. J. Fillastre	601 Marble Arcade Bldg., Lakeland
Georgia			J. M. Heard, Jr.	Persons Bldg., Macon
Hawaii	October	Honolulu	J. H. Dawe	P. O. Box 39, Honolulu 10
Idaho	June 9–11	Sun Valley	H. F. Miller	Moscow
Illinois	Oct. 9–11	Peoria	P. W. Clopper	623 Jefferson Bldg., Peoria 2
Indiana	May 19–21	Indianapolis	E. E. Ewbank	Kingman
Iowa	May 6–8	Des Moines	A. N. Humiston	417 Higley Bldg., Cedar Rapids
Kansas	May 12–15	Kansas City, Mo.	F. A. Richmond	1008 Huron Bldg., Kansas City
Kentucky	March 31–April 2	Louisville	J. L. Walker	640 Barbee Way, S., Louisville
Louisiana	April 10–12	New Orleans	J. S. Bernhard	407 Medical Arts Bldg., Shreveport
Maine	June 5–7	Poland Springs	A. H. Garcelon	State House, Augusta
Maryland	April 28–30	Baltimore	J. H. Shackelford	706 Baltimore Life Bldg., Baltimore 1
Massachusetts	May 5–8	Boston	P. E. Adams	106 Marlborough St., Boston
Michigan	April 14–16	Detroit	F. Wertheimer	Michigan Department of Health, Lansing
Minnesota			L. M. Cruttenden	Lowry Medical Arts Bldg., St. Paul
Mississippi	June 1–4	Biloxi	O. L. Colee	Magnolia
Missouri	May 12–15	Kansas City	C. W. Digges	Exchange National Bank Bldg., Columbia
Montana	May 1–3	Missoula	C. S. Renouard	305 Phoenix Bldg., Butte
Nebraska	May 12–14	Lincoln	F. A. Pierson	Federal Securities Bldg., Lincoln
Nevada	May 12–13	Las Vegas	L. G. Jacob	505 Chestnut St., Reno]
New Hampshire	June 15–17	Portsmouth	F. E. Williams	814 Elm St., Manchester
New Jersey	April 27–30	Atlantic City	J. G. Carr	407 Cooper St., Camden
New Mexico	May 26–28	Santa Fe	J. S. Eilar	First National Bank Bldg., Albuquerque
New York	May 13–16	Buffalo	C. A. Wilkie	1 Hanson Place, Brooklyn
North Carolina	May 4–7	Pinehurst	C. W. Sanders	Benson
North Dakota	May 12–14	Grand Forks	K. G. Allen	Fargo
Ohio	Nov. 9–12	Cleveland	E. G. Jones	185 E. State St., Columbus
Oklahoma	April 13–16	Oklahoma City	E. W. Wise	Medical Arts Bldg., Tulsa
Oregon	June 5–7	Portland	W. H. Hurley	922 Selling Bldg., Portland 5
Panama Canal Z.			T. W. Cagle	Box 243, Cocoli
Pennsylvania	May 6–8	Philadelphia	E. R. Aston	421 Market St., Kingston
Philippine I.			G. A. Carreon	9 Broadway, Third St., N. Manila
Puerto Rico			R. Miranda	Box 747, Rio Piedras
Rhode Island			M. B. Messore	707 Union Trust Bldg., Providence
South Carolina	April 27–29	Myrtle Beach	J. R. Owings	Greenville
South Dakota	May 29–31	Black Hills	E. W. Elmen	Sioux Falls
Tennessee	May 12–15	Nashville	E. J. Justis	Exchange Bldg., Memphis
Texas	April 28–May 1	San Antonio	W. Ogle	313 Medical Arts Bldg., Dallas
Utah			S. Ballinger	401 Medical Arts Bldg., Salt Lake City
Vermont	May 25–27	Woodstock	J. A. Larrow	Middlebury
Virginia	April 14–16	Roanoke	J. E. John	804 Medical Arts Bldg., Roanoke
Washington	May 5–7	Spokane	F. J. Dingler	1502 Medical and Dental Bldg., Seattle 1
West Virginia	May 19–21	Bluefield	C. J. Gavelda	Clarksburg
Wisconsin	March 31–April 2	Milwaukee	K. F. Crane	1233 Bankers Bldg., Milwaukee 2
Wyoming	June 12–14	Casper	J. D. McNiff	208 Grand Ave., Laramie

MEETINGS OF STATE BOARDS OF DENTAL EXAMINERS

State	Date	Place	Secretary	Address
Arkansas	June 23	Little Rock	H. E. Hanna	National Bank of Commerce Bldg., El Dorado
California	June 16	Los Angeles	K. I. Nesbitt	515 Van Ness Ave., San Francisco 2
Colorado	June 15–19	Denver	E. G. Netherton	724 Republic Bldg., Denver 2
Connecticut	March 11–15	Hartford	C. G. Brooks	302 State St., New London
Florida	June 30–July 3	Jacksonville	A. W. Kellner	P. O. Box 155, Hollywood
Indiana	June 16–19	Indianapolis	C. A. Frech	Gary National Bank Bldg., Gary
Iowa	March 17–22	Iowa City	H. G. Bolks	923 Badgerow Bldg., Sioux City
Kansas	June 2–5	Kansas City, Mo.	G. L. Teall	Box 71, Hiawatha
Maine	March 1–2	Augusta	R. A. Derbyshire	Box 387, Skowhegan
Minnesota	June 16–21	Minneapolis	E. E. Comartin	334-100 First Avenue Bldg., Rochester
Mississippi	June 17–19	Jackson	W. R. Madden	Forest
New Mexico	June 23–26	Santa Fe	J. J. Clarke	Artesia
North Carolina	June 23	Raleigh	F. O. Alford	Charlotte
Ohio	March 10–13	Columbus	E. D. Lowry	79 E. State St., Columbus
Oregon	March 3–6	Portland	F. L. Utter	506 Pioneer Trust Bldg., Salem
South Carolina	July 7	Columbia	E. G. Bumgardner	1517 Hampton St., Columbia 29
West Virginia	June 23–26	West Liberty	R. H. Davis	510 Goff Bldg., Clarksburg

OTHER MEETINGS

Name	Date	City	Secy. or Chm.	Address
American Academy of Cleft Palate Prosthesis	March 26	Philadelphia	J. B. Price Secy.	6013 Greene St., Philadelphia 44
American Association of Dental Schools	June 23–25	Chicago	J. E. Buhler Secy.	School of Dentistry, Temple University, Philadelphia 30
American Association of Orthodontists, Central Section	April 14–15	Minneapolis	C. R. Baker Chm.	636 Church St., Evanston, Ill.
American Dental Association	Aug. 4–8	Boston	H. Hillenbrand Secy.	222 E. Superior St., Chicago
American Dental Hygienists' Association	Aug. 4–8	Boston	A. R. Fisk Secy.	1704 N. Troy St., Arlington, Va.
American Dental Society of Europe	August 1948	London	K. C. Campbell Secy.	88 Portland Place, London, W. 1.
American Society for the Advancement of General Anesthesia in Dentistry	March 24	New York	M. H. Feldman Ex. Secy.	730 Fifth Ave., New York
National Board of Dental Examiners	April 21–22		G. L. Teall Secy.	Box 71, Hiawatha, Kan.
National Council on Rehabilitation	April 29–30	St. Louis	C. S. Truax Ex. Secy.	1790 Broadway, New York 19
Ontario Dental Association, Eightieth Meeting	May 19–21	Toronto	H. R. Skilling Publicity Chm.	86 Bloor St., West Toronto 5, Ont., Canada
Northwest Conference in Dental Medicine	May 18–21	Harrison Hot Springs, B. C.	C. R. Hallman Secy.	4298 Dunbar St., Vancouver, B.C., Canada
District of Columbia Postgraduate Clinic	March 10–13	Washington	V. V. Skinner Publicity Chm.	1418 Good Hope Rd., S. E., Washington 20, D.C.
Thomas P. Hinman Mid-Winter Clinic	March 23–25	Atlanta	S. A. Garrett	Medical Arts Bldg., Atlanta, Ga.
Academy of Denture Prosthetics	July 28–Aug. 3	Boston	I. L. Furnas Secy.	928 Silverado St., La Jolla, Calif.
Dental Hygienists Association of the City of New York	March 7	New York	E. Jaeffa Publicity Chm.	265 W. 94th St., New York
Northeastern Society of Orthodontists	March 10–11	New York	O. Jacobson Secy.	35 W. 81st St., New York

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